

*enduro*



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**ENDURO**



# ***ENDURO***

**THOMAS FIRTH JONES**

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## What It's All About

An enduro is the only motorcycle event—perhaps the only sporting event of any kind—that forces the participants to help each other at the same time that they are competing with each other. Any scrambler or flat-tracker can tell you that the man ahead of him is the man to “get,” and the man behind him is the man to spurn. But Bill Baird, when he passes me at an enduro, blows his horn; and when I move over to let him by he says “Thank you” over his shoulder. He knows he may need me to help horse his big Triumph out of the next mudhole. And besides, that’s the way Baird is; and most of the other expert enduro riders are that way, too.

An enduro, formally called an endurance run, is laid out

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across open country, and the best ones include every kind of terrain, obstacle, and road surface that you might encounter by riding in a perfectly straight line from New York to San Francisco. There are rivers to cross and to run straight down. There are blacktop roads, gravel roads, Jeep trails, foot paths. There are fields of brush and second growth, fire cuts, sand pits, railroad tracks, swamps, ditches, rocks, jumps, and holes. There are trees to wind through, and some trees that have to be run over; and each rider must decide which trees he will treat in which way. However, he must follow the course, which may be anywhere from 50 to 500 miles long, and he must stay within one hour of his scheduled time.

One, two, three, or four riders are started every minute, and are required to average a set speed, usually 24 mph. The course is marked with arrows, and each rider is given a route sheet with such timely hints as: "16.3m., R; 16.7m., L into swamp." Once in the swamp, however, it may be that the rear wheel—totally submerged in muddy water that smells as bad as it looks—picks up a cedar log between its spokes and refuses even to spin. Still, says the stern rule-book of the American Motorcycle Association, "The course must be covered by the power of the motorcycle, or by the muscular energy of the contestant or other contestants." In other words, your only choice is to say to the rider nearest you, "Help me get my bike out of this stinking hole, and I'll help you with yours."

In practice, this rule is widely disregarded: spectators often give a helpful push, and riders who are over an hour late and are, therefore, no longer contestants will often hang around the mudhole where they buried their machines to help pull others through. But the time does come when



A side-car rig crossing the East Branch of the Tobacco River, Jack Pine, 1957. The water level rose after the course was laid out.

there's nobody to help you but the guy who's after the same trophy you're after, and there's no sense just sitting there looking at him.

Other times call for cooperation too: we cross a river together, and find that the arrows on the far side have been pulled down by a deer hunter, a souvenirist, or even a misguided cop. My odometer says 83.6. Yours says 82.9. We ask a few other riders who are milling around, looking for the course, and come up with an average mileage of 83.1. The route sheet says "83.4m., R." Half a dozen of us find an overgrown cranberry dike that must be the right turn, and we start off on it together, even though our riding

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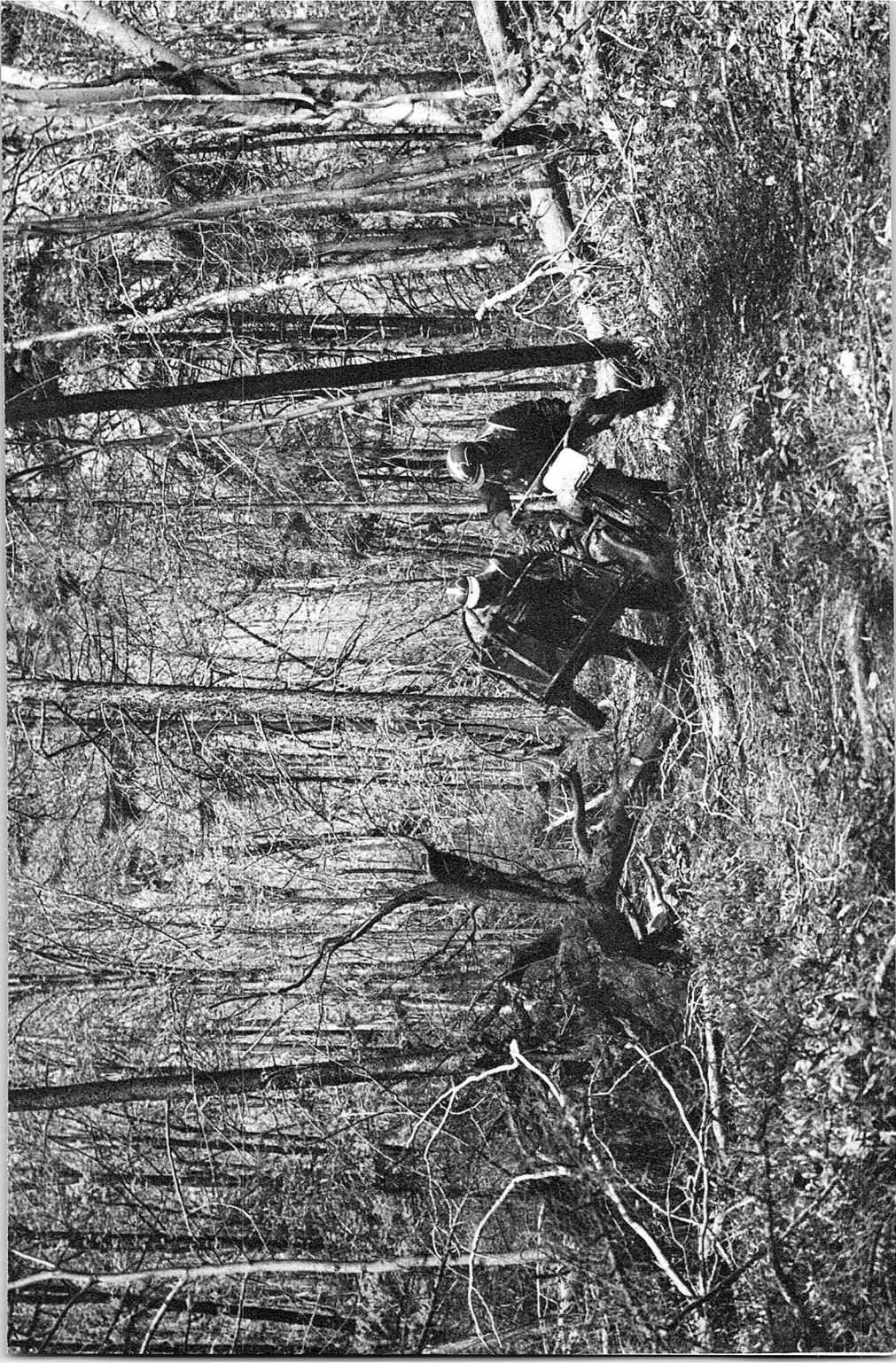
abilities are vastly different, and the next time we're in trouble we'll find ourselves with different partners.

Loners don't make it in enduros: they don't win, and usually they don't even finish. After a few tries at it, they find that the sport baffles them, and they don't come back.

Rich Rosenberry, an expert rider from Kulpsville, Pennsylvania, who has run many times in the legendary Jack Pine 500-mile National, remembers best the evening talks around the campfires and the tips the older riders gave him, and the time they spent the overnight stop in a farmhouse and had to sleep twelve-in-a-room, including two girls ("Jesus, it was a riot: we were so polite!"). He remembers the first year he ran Jack Pine, when he finished third in class with his Harley 175. He was coming in late and tired, trying to make up time in the last twenty miles over the blacktop. An expert on a bigger machine pulled up alongside. "Take it easy!" the expert shouted, above the roar of the engines, through the cold wind and the gathering dark. "That little thing's taken you too far. Don't seize it now."

Cooperation goes so far that many riders like to join up with one or two members of their own clubs and ride together on the same number, which means that their schedules are identical throughout the day. At small-time events, they sign up the morning of the run, presenting themselves to the starter as late entries. In bigger events, where last-minute or "post" entries aren't allowed, the organizers sometimes let them send in their entry blanks stapled together, so that they are drawn from the hat simultaneously. But

Horsing a side-car rig over a log that would not have delayed a solo rider, Berkshire Trials, Massachusetts, 1969.



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other organizers interpret literally the AMA rulebook dictum, "Starting position shall be determined by drawing only." Perhaps it's better that way. Riding with a friend, you miss many of the interesting things, funny things, maddening things that can happen at an enduro.

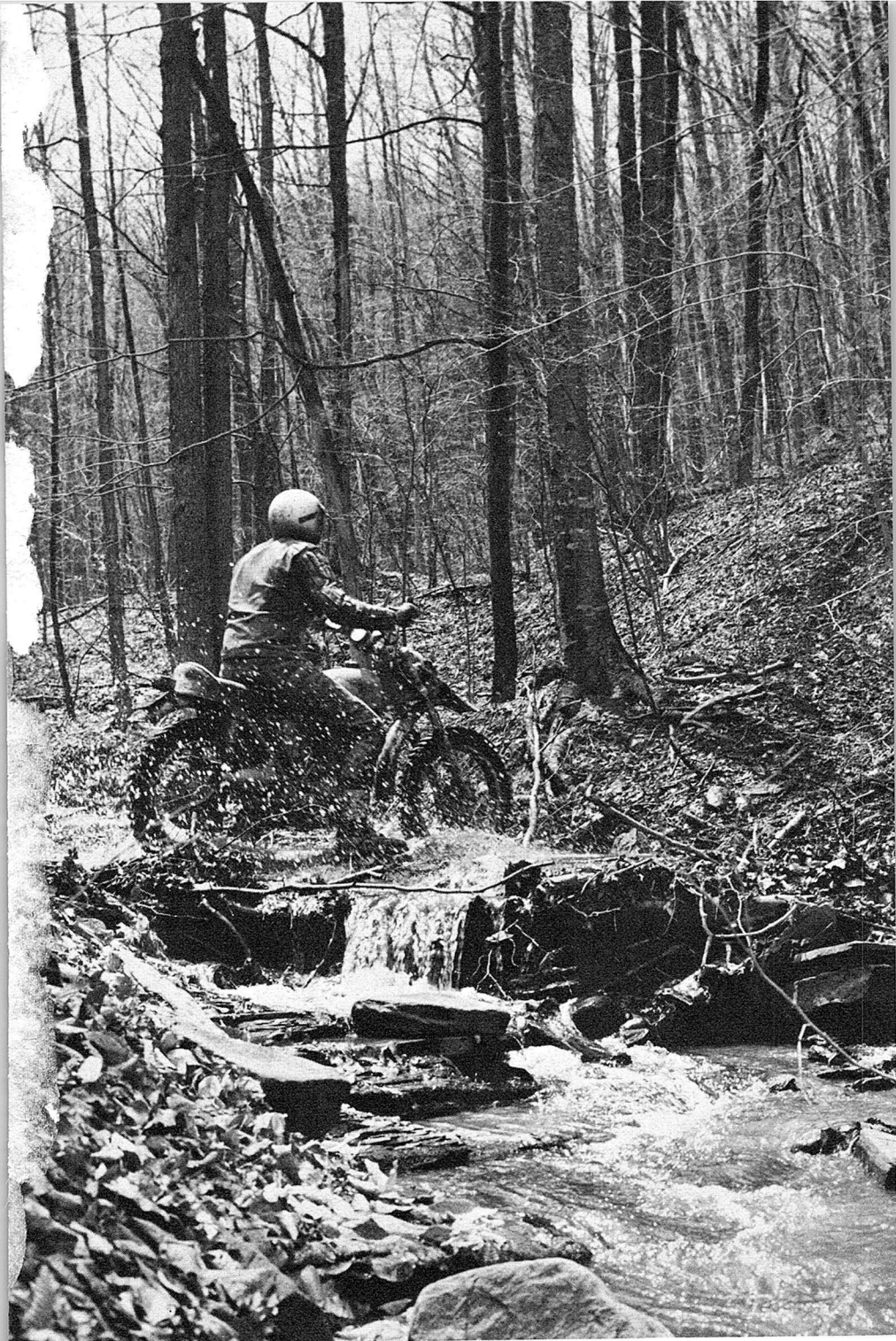
Cooperation or no cooperation, much of what you do at an enduro you have to do for yourself. Preparing your machine is part of it, and you'd better be able to troubleshoot it, too. Other riders may stop long enough to lend you a tool, but they aren't going to tie that muffler back on for you, or clean that carburetor, or find that short. But most of all what you must do for yourself is ride.

At the start, the organizers graciously give you 1000 points. However, they take your time at a number of checkpoints throughout the day, and you lose one point for each minute late and many more points for each minute early. The checks are usually set up right after that swamp where you got stuck or right after that sand pit where you lost your chain. Occasionally, however, they are right before that swamp, and if you ride well enough to be running early, it can cost you dearly. But when you start riding enduros, you'll find that you'll be late at the first check and later at each successive one thereafter.

Checkpoints cannot be less than three miles apart in enduros of less than 100 miles and not less than five miles apart in runs of more than 100 miles. In no case can they be more than 40 miles apart. There are four kinds of checks: known, secret, emergency, and observation.

Start and finish are *known* checks, and lunch stop may

John Young on his BSA Victor at Cayuta. Young has won four Nationals.



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be, too, if the route sheet says so. A yellow flag is flown, and although you lose a point for each minute late, you may arrive at any known check up to 15 minutes early without penalty. Naturally, you cannot leave the start until the starter tells you to; and there, as at every other check on the course, your time, name (or initials) and competition number are written down.

The majority of checks at any enduro are *secret* checks. A diagonally divided red and white flag pops up out of nowhere, and three surprisingly dry, clean-looking people are there to laugh at your muddy face and take your time to the nearest minute. Their check is located on an even minute (in a 24 mph enduro, it can be at 48 miles or 48.4 miles, but not at 48.2 miles) and their watches must read within 20 seconds of the official or "key" time, as told by the key clock at the starting line. Probably you're late, but if you're early you may waste a minute by slowing down, provided you don't ziz-zag or touch the ground with your feet. That's why most secret checks are just the other side of blind corners.

Every enduro must have at least one *emergency* check, where your time is taken to the exact second, and seconds decide the winner of the event in case of a tie for points. A green and white flag is flown, and unless you're planning to wind up in a four-way tie with Penton, Esposito, and McLane, you take the emergency check like any other: tell the clean, dry lady your name and stuff the receipt she gives you into your dirty pocket. Frequently the emergency check is combined with a secret check and both flags are flown; but the best advice, even to an excellent rider, is to

Cayuta, 1968.



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worry over the minutes and leave the seconds to the scorer.

*Observation* checks are rarely used, at least in East Coast enduros. A red flag is flown, and your time is not taken: the dry people just make sure you go *through* the quicksand, not *around* it. According to the rule book, an enduro may also have an observed section where strings are set up on both sides of the course and you lose points for touching your foot to the ground, as in observed trials. However, I have never seen an observed section.

An enduro has its respites, as well as its checkpoints: your adoring wife has been given a spectator sheet, similar to your route sheet except that it tells her how to use smooth highways instead of logging tracks to the spectator points. You'll run into her every hour or so, if she can read a map; and if you're nice she may give you a sip of her coffee or a drag on her cigarette. In addition to seeing you at the grade crossing where you misjudge the angle of the rails and wind up flat on your back, with your crash helmet wedged between the ties, she'll be waiting at the official morning and afternoon gas stops. You have a breathing space here, because check points aren't allowed within several miles of them, and you can tank up and dip into your warm stationwagon for tools and parts too cumbersome to carry along with you.

She'll also be waiting at the lunch stop, where you have an hour of free time to eat, smoke, oil the chain, lie in the sun, and shoot the breeze with other riders. At one lunch stop, I ran up to greet a friend who was riding his first enduro. "It's better than sex, isn't it?" I shouted, slapping him on the back.

Easy and pleasant riding in one section of a New Jersey enduro.





## *What It's All About*

He got off his machine slowly and stiffly. "Sex is a lot drier," he said.

If you're late at lunch, you have a chance to make it up and start out on time again by taking 45 minutes, 30 minutes, or even 15 minutes instead of that hour you've been promising yourself. It's perfectly legal, but hard on the digestion.

It's fun to stick around at the end of the day, waiting for the results to be tabulated; but if you're in a hurry, you can put your machine back on the trailer and head for home. The good enduros all send out results sheets, telling how many of those 1000 points each rider had left in the evening; and if they don't send results, they'll let you know if you won a trophy. But it's safe to guess that you didn't, because hardware is very far away for a novice rider at enduros, much farther than it is at scrambles. For quite a while, finishing the run within an hour of your scheduled time is the prize you will be after, because finishing *any* enduro is a genuine triumph. Less than a third of the starters usually do.

But if you finish a few of them, and learn to ride well enough to make up the minutes you lost in that mud hole and get back on time again, your chances of winning a trophy are increased by the division of motorcycles into five displacement classes. Riders are also divided into A (expert) and B (amateur), so that there are nine classes (four expert displacement classes) in addition to senior (over 45 years old) and powder puff (women). You move from B to A by a points system: to get points you have to be in

John Penton rode a BMW with BSA forks five years ago. Legend has it that the BMW factory kept trying to buy the machine back from him to find out what other modifications he'd made.

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the top 20 B riders when fewer than 200 B riders are entered, or the top 40 B riders when more than 200 B riders are entered. Winning your class earns 25 points, and 100 points lifetime total moves you up. Each rider must keep track of his own status and notify the AMA when he has his 100 points.

There is a different points system to determine each year's Grand National Enduro Champion. The top ten A riders at each National event get points which are added up at the end of the year, just like the points system that determines the Grand National Champion in professional racing.

Like professional races, not all enduros are Nationals. For many years there was only one, a 500-miler usually sponsored by the Lansing Motorcycle Club of Lansing, Michigan: the notorious Jack Pine Enduro. One attractive feature of this run was that the winner got an appropriately engraved copper cowbell for his trophy, and next year he had to wear the cowbell around his neck to show the other riders the way. And the winner of that one run was National Champion: no points system.

Now there are points, and there seem to be more Nationals every year (20 of them in 1970). A handful of good A riders who are in the running for the Championship, among them Baird, Penton, Young, and McLane, do try to get to most of the Nationals; but probably no one makes every National, because they are spread out all across the country and across nine months of the year, with a concentration in spring and fall. Even the winner of an enduro gets nothing but a trophy (and perhaps a free enduro machine and parts from a manufacturer) to help him with gas expenses to the next one.



Bill Decker, 1965 Jack Pine winner.

It's fun, even when you're a beginner, to ride in one or another of the Nationals and see the top riders in action. You learn to identify them quickly, even in a field of four hundred: John Penton, stocky and tense in his Barbour suit and red, white, and blue helmet; Bill Baird, lanky and soft-spoken, wearing leathers and looking, behind his spectacles, as if he doesn't quite know what's going on; Gene Esposito with a red kerchief around his neck which he pulls up over his hawk nose when the dust gets thick; Jack McLane who looks like a baby when he has his helmet on.



A Triumph leads a Honda out of the water at Cayuta.

It's an education to ride with these men. You might start on the same minute with one of them, or you might have one pass you sometime during the day. I have been bobbing and weaving to the best of my ability across the stump-strewn plains of central Jersey and had Baird go by, looking smooth and missing almost all the stumps, making 35 mph when I'm making 20. How does he do it? I don't know. I tried to follow him and took a header.

And last fall Penton passed me on a sand trail just before a creek crossing. There was a bridge: two logs set about 40 inches apart, and on the far side a ledge about a foot high made by another log. Penton stopped and I almost

didn't, because my brakes were wetter than his. "Let's go!" I shouted. But after looking for a moment he got off his bike, walked on one log and eased the machine across on the other, with just a touch of gas and clutch at the end to jump the machine up over the ledge. I followed him, but if I'd been left to my own judgment I probably wouldn't have stopped but would have ridden straight across one log, hit the ledge, and fallen back into the creek.

It is also wise to ride the Nationals with the good riders *now*, because you may not be able to much longer. Sandy Lane, for instance, the 500-mile National Championship course and a shorter National almost every year since then, had 120 entrants in 1960, the first year I rode it. Last year it had 400, with 50 turned away and another 70 waiting around as alternates in case someone didn't show up. Jack Pine cuts off at 600 entrants and has many more applications. In theory, postmark date determines who will ride in these popular events, but in practice the sponsoring clubs often do some jiggling to assure that experienced well-known riders get a chance to start, no matter when they send their entries in. In a few years, Nationals may be open only to A riders.

With this new popularity comes the great scourge of motorcycling events: outlaws. An outlaw, strictly speaking, is anyone who belongs to a motorcycle club not affiliated with the AMA. The outlaws who go road racing with the alphabet club and its counterparts are harmless, and they seldom come to enduros. But the outlaws who are the subject of cheap movies and cheap magazine articles, the outlaws the anthropologists and psychologists are studying, do come, and they can cause a great deal of damage. At AMA sportsman events, they inevitably have chips on their



Expert Rich Rosenberry with his red coveralls and Harley Sprint at Cayuta, 1968.

shoulders, because they know their choppers are useless on a scrambles track or an enduro course, and they also know—I suspect—that they don't have the brains or guts or coordination to do real competition riding themselves.

They are getting to be a real problem. A few years back, they made such a ruckus in Lansing during Jack Pine that the event couldn't be held the following year. In 1967, they showed up at the Sandy Lane finish line, a roadhouse in central Jersey. They tried to get drags (that feeblest of all motor sports) going on the highway, but were sent away. A month later they came back forty-strong, picked a fight

in the roadhouse, and beat up the barkeep and the half dozen customers. The venue of Sandy Lane had to be changed.

Increasingly, the start-finish line of an enduro is a rural fire house, or, if the sponsoring club is especially prosperous, their club house and grounds. Sometimes supper is served the night before the run, and coffee and doughnuts can be bought there all night. Sometimes there is even a dance. People come from far away, and they come early. It's well to reserve a motel room in advance, unless you plan to camp out. In the morning, breakfast is served by a ladies' auxiliary, and in the evening there's a banquet and trophies are awarded.

Not much drinking is done: most riders just don't have the strength for it, after a day in the woods. But there's a lot of good talk, and late in the evening, when riders are stumbling around in the dark, making sure the machines are tied down to the trailers for the trip home, some of them are still calling to each other: "Say, do you remember where that log was, where the trail dipped down through the briars and you couldn't see? Well, when I got there, there was this guy on a Bultaco, and he. . . ."

# 2

## Buying Your Machine

The ideal enduro motorcycle would develop 30 horsepower at 500 revs, and the same 30 horsepower at 5000 revs. It would be reliable, strong, and comfortable, and would handle so well that it would automatically compensate for terrain and rider errors. It would weigh no more than 175 pounds.

It is not malice or stupidity that keeps the factories from making such a machine. They are working on it; and in recent years they have come much closer to it than they ever did before. But because no one has yet come up with the ideal machine, the rider must compromise one standard or another: power, flexibility, weight, handling, reliability.

## *Buying Your Machine*

And most riders must also compromise with their wallets.

Time was when you stripped a few extra parts off your road machine and entered it in an enduro. It's harder to do that now, because enduro courses are tougher than they were in the days when the boys plowed through on their Harley 74s, and because the competition is better prepared. Similarly, I can remember riding my Zundapp 250 to the scrambles track, racing, and riding home with (sometimes) a trophy on the tank. No more.

There are certain bikes, like the Triumph Trophy 500, that are fairly suitable for the road and for enduros; but you probably wouldn't buy one unless you had woods riding in mind from the start. The real question is, do you take your eight-year-old Honda dream, with low pipes and panel bars, off for your first Sunday outing in the swamps? The answer is yes, because it will tell you as well as any bike can what is most important to you in enduro machinery (it may even tell you you don't like enduros at all), and a couple of runs later you'll be a much more knowledgeable buyer.

Many companies now make enduro or "Six Day Trials" models (trials are the European equivalent of enduros, and are not to be confused with *observed trials*, which are a different kind of competition). They include BSA, Bultaco, Greeves, Hodaka, Honda, Husqvarna, Jawa, Kawasaki, Maico, Montesa, MZ, Ossa, Penton, Sachs, Suzuki, Triumph, Yamaha, Zundapp, and the one American manufacturer, Harley-Davidson. Every one of these machines has at least one shortcoming.

In general, the Japanese four-strokes have no torque, and the Japanese two-strokes seize. British and Spanish machines have soft metal and troublesome electrical systems.



Jawa-CZ 175cc. Comfort and good handling, but not speed.



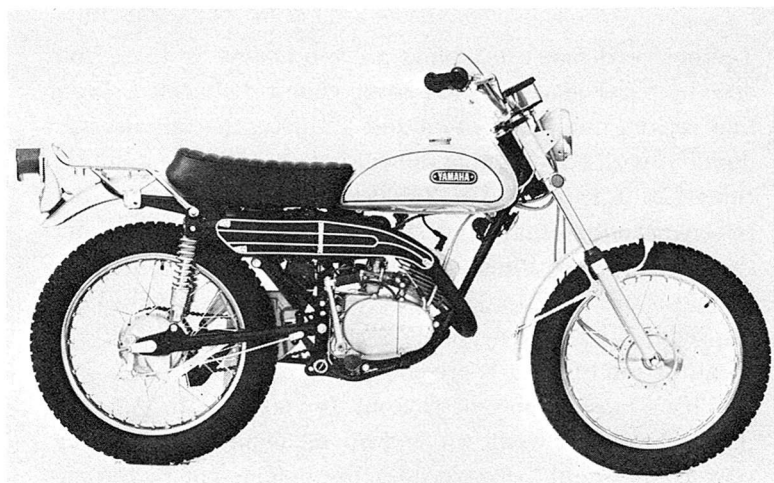
## *Buying Your Machine*

Teutonic and Slavic machines are too heavy. So there you are: no ideal machine. You must choose between a Jawa that repairs easily and often and a Honda that repairs seldom but with considerable difficulty; between a Penton that rides like a truck and a Zundapp that bottoms out; between a Montesa that won't start and a Kawasaki that won't stop. But each of these machines has its virtues too: Jawa handles superbly, Montesa is very light, Zundapp and Penton engines are sturdy, Honda and Kawasaki dealers are plentiful and their parts are cheap.

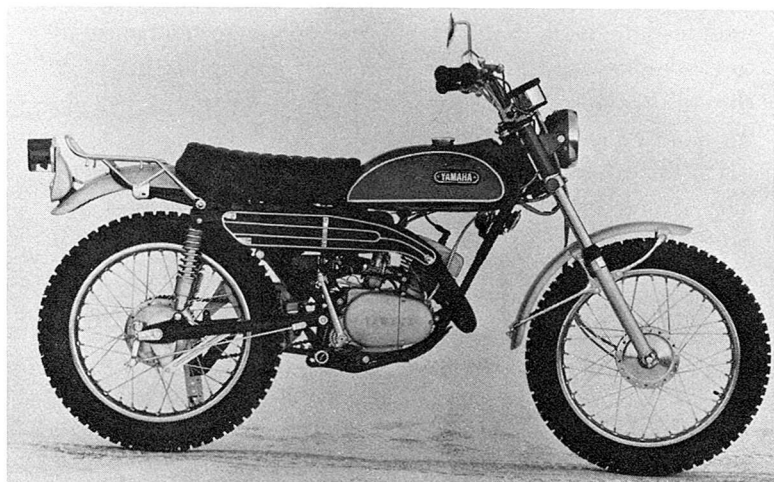
What's most important to you? If you tend to get confused, you don't want an enduro machine with a peaky power curve and a five-speed transmission. You're coming down a trail, and the arrows say right but you can't see where right goes, and there's a big boulder you really don't want to hit, and that guy on the Matchless behind you is blipping his engine and threatening to pass, and you're 47 minutes late; well, that's the time when you're too confused to think about shifting gears. You want an engine that pulls through a wide rev range, so that third (of four) will do for almost any circumstance.

On the other hand, if you have a bad back, or you aren't very strong, or you're just plain lazy, maybe the most important thing is not having to get off your machine and push. In that case you want high ground clearance, large tires and light weight, even if you have to do a lot of gear shifting to get through.

The motorcycle magazines test enduro bikes and report their findings. However, few magazines have an active enduro rider on the staff, and anyway, they get so much of their revenue from advertising that it's hard for them to be completely dispassionate. By studying the reports every



Yamaha 125cc. Perhaps the best of many good Yamaha enduro machines.



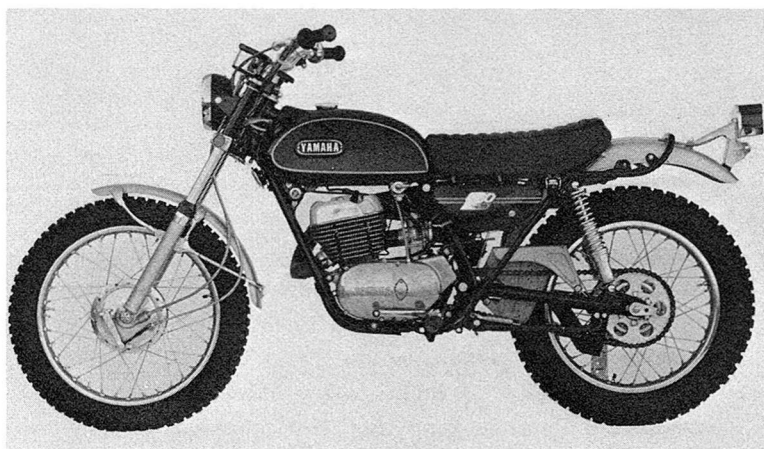
Yamaha 175cc. The same frame and running gear as the 125.

## *Buying Your Machine*

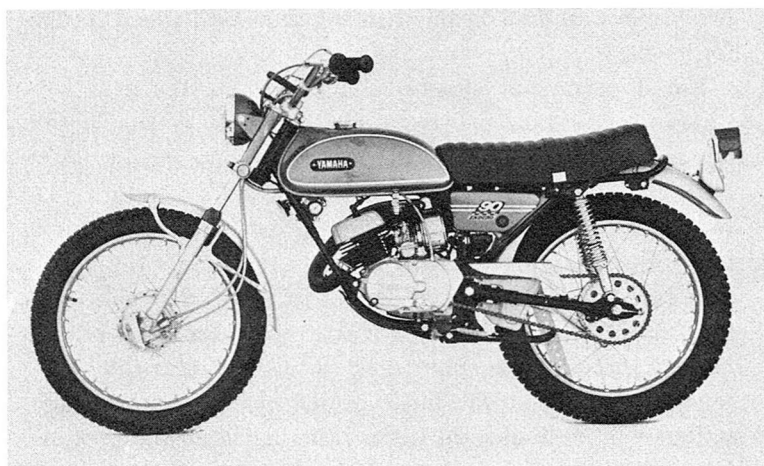
month, you can learn to read between the lines to some extent: "solid construction" usually means that the bike is heavy, and a "slight vibration" may mean that it will shake your teeth out. And performance figures on the test reports reflect a state of tune that you certainly will not be able to maintain on your enduro bike. The highly tuned two-strokes, particularly the Japanese and Spanish ones, get out of tune fastest: they lose about one horsepower for every hundred yards they travel from the showroom door.

Even when the magazines are trying to be as honest as possible—and some of them do try harder than others—they don't pretend to keep their test machines as long as you're going to keep your next enduro bike, so much of what they say must be guess work. Especially beware of automotive magazines and their occasional motorcycle tests: *Hot Rod Magazine* once found a stock BSA to be many miles an hour faster than the then land speed record for its class.

But if magazines sometimes mislead you, the manufacturers' specifications sheets are guaranteed to do so. There's the old horsepower joke: "It says 23 horsepower, but they must be very small, Japanese horses." There's a weight joke too: if you don't believe it, try lifting that famous 250 single that's supposed to weigh 220 pounds. And there's the "97.38 mph" joke (sounds official, doesn't it?), the "120 miles per gallon" joke, the "waterproof brakes" joke. How can brakes be waterproof, when submerged in water, unless the backing plate and drum are made in one piece? The magazine writers may be indulgent toward the machines they're testing, but the manufacturers derive their test results under conditions so special that they have no meaning at all for the average rider.



Yamaha 360cc. A new and as yet unproven machine, though it has won the 1970 Mint 400, a professional cross-country race.



Yamaha 90cc. At present, this is the smallest feasible enduro size.

## *Buying Your Machine*

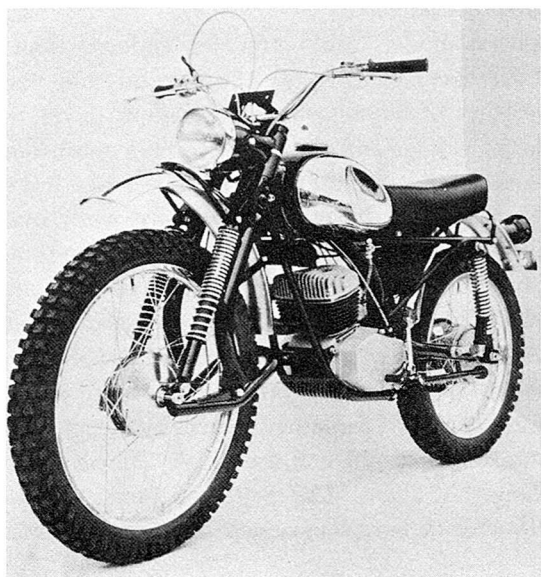
But when you are actually riding an enduro and you come upon enduro ace Charlie Stapleford stuck in a swamp with a dead engine, and he says, "This \_\_\_\_\_ is the worst \_\_\_\_\_ machine I ever rode," you can believe him. He has no reason to say that it's bad except that it *is* bad. Don't you buy one.

The best advice comes from fellow riders, especially the ones who *are not* dealers. They'll be glad to talk to you, and they won't be snooty about your Honda dream. They'll tell you how their bikes are holding up, after ten or twenty outings, and whether the handling remains as good as it at first seemed, and just how well the power band of the engine matches the gearbox for the endless variety of enduro situations. You'll find riders who, like you, feel that comfort is most important, or that weight is most important, or power, or handling, or reliability. With what they tell you, and what you see of them on the trail, you'll be able to make a wiser choice.

The enduro models are better for enduros than other bikes are. However, if you can't afford to buy one new, you should be leery of buying one used. Enduro bikes take an incredible pounding, and they're just about worn out with two or three thousand miles on them. The brake linings are gone, and even the drums are probably worn out from abrasion. Sand has gotten to every part of the engine-transmission, and the whole expensive thing will need an overhaul soon (such an overhaul as may cost over half the *new* price of the bike). In addition, the shocks are loose, the wheels are oval, the sprockets are ground to points, and the wiring is full of temporary splices made on the trail. The gas tank rattles, and will soon leak. The seat is ripped and no longer resilient. The pegs are bent, the stand is missing, the handlebars seem made for a polio victim, the



Ossa 250cc with much fiberglass work. All the Spanish bikes have many similarities. The aluminum wheel rims on this model are an outstandingly bad idea for enduros.



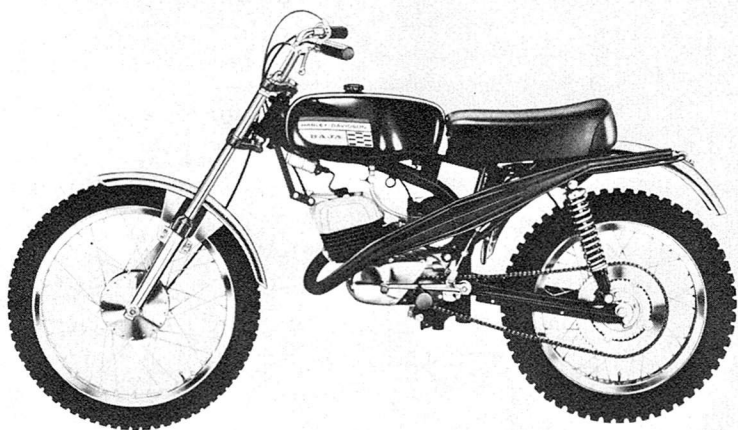
Sachs, available with 100cc or 125cc engine. The Earles forks are almost unbendable.

## *Buying Your Machine*

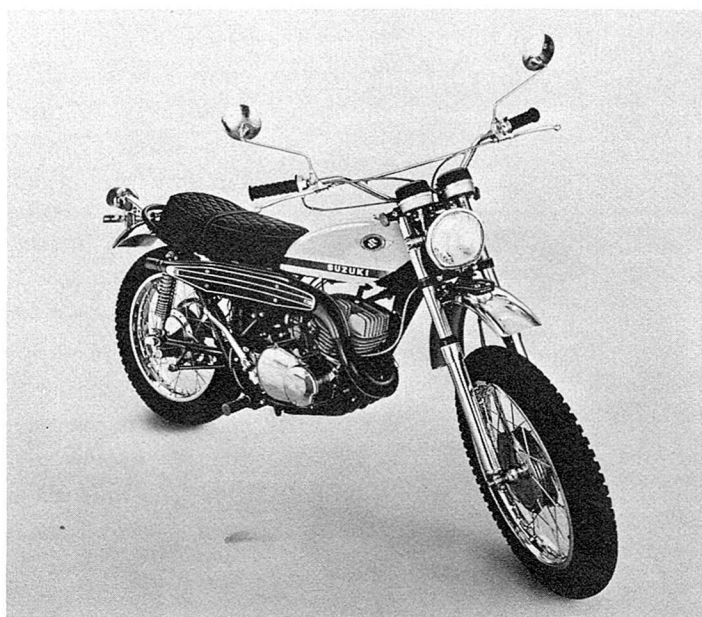
gas cap has a funny way of flying off in your face. The machine is overpriced at any price.

But there are a good many used enduro machines whose tires have never trod on dirt. They have a sporty look, and people buy them—especially the Yamaha singles—to ride to work on summer mornings, and over to the girlfriend's house, too, if the sky doesn't cloud up. Such machines are a good buy used: they are better built than road machines in the first place, and they have had no more than standard road abuse. But remember: even road motorcycles are not like cars. Most of them are ready for major engine work at 10,000 miles, and very few last long enough to see 20,000. A three-year-old motorcycle is *old*, and you should pay less than half of its new price. A five-year-old motorcycle is usually something to work on, rather than something to ride.

Buying new, of course, you should buy an enduro model; but buying used, there are many other classes of motorcycles which are more or less suitable for conversion to enduro use. Best is the observed trials machine, made by at least a dozen manufacturers. It has the low-compression, slow-revving engine, the woods suspension, the generous ground clearance, and even the high pipe and knobby tires. What it does not have is lights, which you will need because part of any enduro is run over public roads, and even enduro machines must meet the increasingly tough state standards. Observed trials machines also have very small, uncomfortable seats, because the rider is meant to stand up, not sit down. Often, the clutch is worn, the gas tank is too small for enduros, and the footpegs are too far to the rear. But if you can pick up an observed trials machine cheap enough to justify making some repairs and modifications, it may be a good buy, especially because trials do not take the



Harley 100cc. With no lights or muffler and a highly tuned engine, it is more suitable for desert racing than enduros.



Suzuki 250cc. Pleasant, quiet, but cumbersome.

## *Buying Your Machine*

life out of a motorcycle the way other forms of competition do.

A genuine scrambler (as opposed to a street scrambler) should not be bought, because it has certainly been beaten to death. From the day it was new, it has been driven at full throttle, wound out to the last possible revolution, and shifted without the clutch. And the engine, even if it were in good shape, would be totally unsuitable for you. Scrambles machinery is more specialized than enduro machinery, and the engines now going into most scramblers—particularly the small displacement ones—have no useable power at all in the low rev ranges that an enduro rider wants. And the high rev power, which comes on very suddenly, will break the rear wheel traction just when you're negotiating a narrow bridge or a hillside of wet shale. Converting such an engine means, if it is a two-stroke, throwing away the original piston, head, barrel, carburetor, and exhaust, in the hope of finding milder replacements. If it's a four-stroke, the changes needed are hardly less drastic.

A scrambler also has a close-ratio gearbox, usually of five speeds. And it has no lights (and often no provision for installing them), no speedometer, a small gas tank, minimal fenders. At first glance it may look similar to an enduro machine, and factories like Maico and Bultaco do make scrambles and enduro machines with the same frames and engine castings; but the differences inside should keep you from buying a scrambler.

Then there are the road machines, which are tempting because so many are for sale at such a variety of prices. Once upon a time, we thought them perfectly fine for enduros: we favored the lovely but unreliable Triumph Cubs and BSA 250s, the sturdy Zundapps with shift levers that bent

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back on stumps, the elegant Harley Sprints with vitals dragging the ground. John Penton even competed on a modified BMW 250 for several years, and won many Nationals with it.

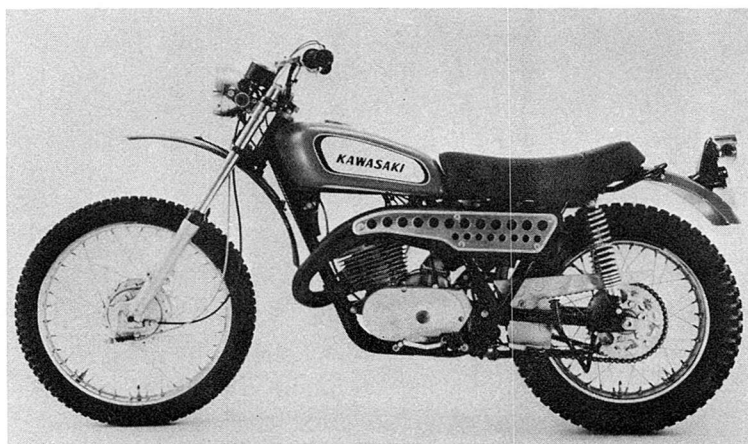
These machines and their modern counterparts are still around. They are no worse for enduro riding than they ever were, but modern enduro machinery is much better. If you have an old road machine, by all means use it till you learn the ropes; and if you have a limited budget, maybe you should buy a slogging, 400-pound Zundapp 250, because it's probably in better shape than any enduro machine you can afford. But don't sink a lot of money into modifying it, because it will never really satisfy you.

"Street scramblers," whatever that means, are often thought of as suitable enduro bikes. "Street scramblers" are standard road machines with very high, very chromium pipes, a skidplate, wide handlebars, and lowered overall gearing. None of the basic components differs from road machines, but the high and bulky pipes and low gearing make them uncomfortable for the road, while their weight, suspension, and low ground clearance make them unsuitable for anything else.

In a bar one night after club meeting, I met two Yamaha mechanics who were attending a week-long service school. They came from a part of the South where enduros aren't popular, and had seldom seen the line of Yamaha single cylinder enduro machines. That day, they had taken the DT1 (250cc) forks apart, and even after several beers, they were still agog over it. "Boy!" they said, "all Yamahas are quality" (they had to say that) "but those enduro singles, they *really* are quality!" To their practiced eyes, the bushings, the seals, every small part was better designed and



Suzuki 120cc. Suzuki's best enduro effort to date.



Kawasaki 350cc. A new but promising contender. Any expert rider showing interest in this bike will be well supported by the factory.

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made. That's why you can buy the road twin (or the street scrambler) cheaper than the enduro single.

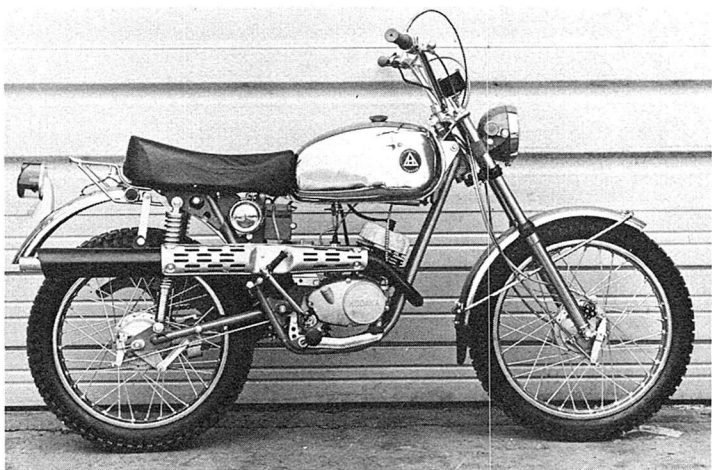
For many a rider, the displacement class his machine will put him in is a big factor in deciding what machine to buy. For the beginner, it isn't so important, because he's mainly interested in finishing, in learning the sport and the riding techniques. Officially, the classes are:

	<i>B riders</i>	<i>A riders</i>
Bantam	0-100cc	
Lightweight	101-200	0-200cc
Mediumweight	201-250	201-350
Lighthweight	251-500	351-600
Heavyweight	501 and up	601 and up

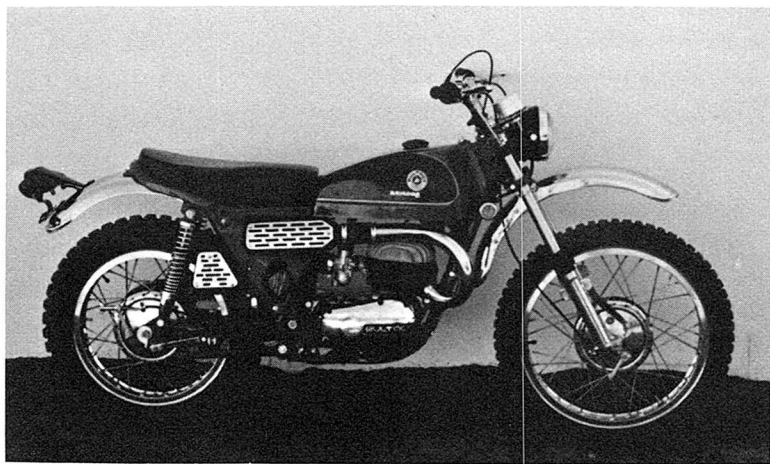
Most of the Nationals stick to these classes, but in many local runs the classes are telescoped. They may become light (0-125), medium (126-250), and heavy (251 and up) for both A and B, thus eliminating three sets of trophies and considerable confusion for the sponsoring club. But whatever the class structure, about half the B riders seem to show up on 250s because, at the present stage of motorcycle design, 250s offer the best compromise between power and weight. However, the rules don't allow a slightly bored-out 250 to move up to the next, less populous class.

The next technological development in enduro machinery will unquestionably be 125s or even 100s that have the power of the 250s at a considerable weight saving. Harley and Yamaha have already made some efforts in that direction, and the small iron becomes more popular every year, while the larger classes go begging. There is good reason for that.

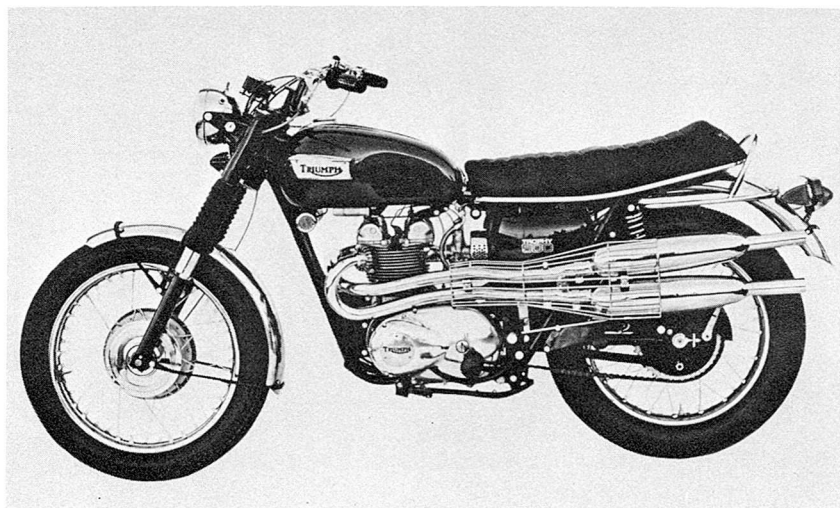
Large machinery is expensive. Many good enduro 125s sell for under \$500, and a good big machine costs twice



Hodaka 100cc. Perhaps the toughest of all the Japanese bikes. Its 17" wheels are far too small.



Bultaco 250cc. Not too different from the road model, but still a good woods bike.



Triumph 500cc. A favorite of the experts for 20 years, now yielding to the lighter 350cc two-strokes.

that. It does not give twice the pleasure.

And large machines are heavy. Al Riffard is proud to have gotten the weight of his big (750cc) Triumph down to 340 pounds, and to do it he has used a Metisse frame and replaced all sheet-metal parts with fiberglass. Cliff Ferris managed to squeeze a Triumph 500 into a Greeves frame, but it cost him a fortune, and it still must top 300 pounds.

A Kawasaki 120, stripped of a few unnecessary parts, weighs about 175 pounds. It can drop into mud that closes around both wheels and be picked out by one man. If the rider gets off and walks beside it in the wet sections, it almost scoots—like a Jesus bug—across the water. Of

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course, once out of mud and onto hard-packed dirt roads, I'd rather have a Triumph. But will the Triumph ever get that far?

There are many features you should look for in an enduro machine. The engine's power should come in steadily and reliably from idling speed on up. It's better to have *less* power than to have power in sudden surges. The engine should be coupled to a smooth-shifting, wide-ratio gearbox, preferably of four speeds. It should drive through a strong clutch. A geared primary drive, with a starter that can be kicked without fishing for neutral, is helpful. Many riders even like an electric starter (nice when you stall on a steep hill), but it does add weight.

The machine should be reliable. Ventilating holes, like that on the carburetor of the Kawasaki 250, will suck up water. Electrical systems that show any sign of weakness on the road will fail much more quickly in the woods. If a machine fouls plugs, it's useless because it's hard to change a plug on the trail without getting dirt into the cylinder, which will foul the new plug twice as quick. If the engine has any tendency to seize, it will certainly do it when pulling at low speed through bottomless sand. Tire locks and a chain case (Bultaco has a particularly good one, copied from the East German MZ) add to the reliability of a machine. Good brakes are also very desirable.

A machine should handle well, and it should be comfortable. The comfort of a seat is easily told, but the technology of springs and damping (shock absorbers) is more complicated. When a suspension bottoms, the bike is out of control, and it may do anything. Topping is little better. On the other hand, a stiffly sprung machine, one that never bottoms or tops, will tire the rider quickly; and when you're

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tired, you ride less well. Stiff springs also make the wheels skitter. Currently, the engineers think the best way around the problem is to use long-travel springs which are progressively wound, so that the soft coils compress readily and leave the stiffer coils to handle the logs and boulders. Just grabbing the front brake of a motionless motorcycle and leaning and bouncing on the handlebars will tell you quite a little about a suspension.

Both Earles fork (Sachs, Greeves) and telescopic fork (most of the rest) can be designed to handle well in the woods, though telescopic is the fad now, because it is lighter, just as Earles was the fad ten years ago, because it is sturdier. For enduros, an adjustable rear suspension is of no special value: it's better suited to a touring bike, where the load is more likely to vary with the number of people and the amount of baggage.

An enduro machine needs an accurate speedometer with reset odometer reading in tenths of a mile. Once you are able to stay on time, or to make up time you have lost, you need to know when enough is enough. The reset knob lets you wind the odometer back to compensate for the wrong turn you took, or forward and back to adjust for inaccuracies that you discover when you get to a turn.

Once you have your enduro machine, you must find a way to get it to the event and back again. Ten years ago many entrants, even in Nationals, rode their machines to the start and, if they weren't disabled, rode them home again. It was colorful: the Harley K-models smoking in across the country roads in the dawn. But the K-models are gone from enduros now, and so is the custom of riding to the event, partly because a car or truck can carry air pumps, gas cans, and spare parts.

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A pick-up truck is a very good motorcycle conveyor: that's why all the dealers use them. Three or four bikes can be rolled up a plank and tied down with little fuss, especially if the truck has racks and metal eyes or cleats for the ropes. Half-ton truckbed length is plenty of room. But if you don't have use for a pick-up on the days when you're not going to enduros, you probably don't want to bother with one.

Bus-type stationwagons will hold a couple of bikes, if you don't mind oil and mud on the floor. A regular stationwagon, of course, holds no more than a sedan trunk; but a lightweight bike can often be gotten into either. It better be a stationwagon or sedan well past the *concours d'elegance* stage, because getting the bike in and out will certainly scratch paint, and maybe bend metal too.

For about \$30 you can buy bumper baskets: two steel hoops that mount on the back bumper, so that the motorcycle wheels drop into them and the bike is carried parallel to the bumper. It sounds good, but the upper half of the motorcycle has to be stabilized with a metal rod somehow extending from the trunk lid, or the bike will flop around till it flops off. And the baskets must be removed every time you remove the bike, or else they will be crushed by the guy with the GTO trying to get into that VW-sized parking space behind you. Then you'll have to deflate your bike's tires before you put them in the baskets.

For a couple of bucks, you can rig an eye in your back bumper, remove the front wheel of the bike, thread the bike axle through the bumper eye, and tow it away. Don't forget to run ropes from the bike handlebars to the car fenders; and remove the chain, because a transmission can burn out from all that idle spinning. Some people like this system,

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and I tried it once, but found it a nuisance to disconnect and reconnect the brake and speedometer cables. When I got to the enduro, and my number was about due, I started the bike's engine, put it in gear, and remembered that the chain was lying on the floor in the car's back seat.

By all odds, the best rig is a trailer, if you have a place to keep it when not in use. You can buy one for two or three hundred dollars, or you can make one for about half that. Don't bother with welding up the steering of an old truck front axle: buy a regular trailer axle, or the rear axle from a light, front-wheel-drive car, like Saab or DKW. Make channel iron runners for the cycle wheels, and make one or three of them, not two, because a two-runner trailer won't balance properly with just one motorcycle. Once the cycle is on, you can tie it down by the handlebars and the rear fender, and the cycle's own suspension will keep the ropes taut.

But the easiest kind of trailer is the rented kind. You can rent one 30 or 40 times for the cost of buying, and there are no storage or licensing problems. If you buy or build one, you'd better plan to use it a lot.

With a trailer and an enduro machine, it would seem that you were ready to go. But any machine—even the best one on the market—can be improved by certain modifications; and the less good ones need many more modifications before they allow you to show what you can do at an enduro.

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The temptation is to take an enduro bike home and strip everything off it that isn't welded to the frame. Weight saving is good, but it must be done judiciously, and you may well find that your machine weighs more when you've finished modifying it than it did when you started.

If it has passenger pegs, remove them, unless you plan to run in the almost defunct buddy-seat class. If it has two stands, you can remove at least one, and if you don't mind leaning the bike against a tree when you need to work on it, you can remove both. Stands—particularly center stands—can be surprisingly heavy, and frequently they cost you a couple of inches of ground clearance.



1956 Jack Pine winner Leroy Winters on a 125 Penton at Jack Pine, 1969. Boyd Reynolds says, "Probably the best dressed man on the trail. Leroy makes everything look easy and after a run he isn't even dirty."

Remove the tachometer, if your bike has one, and plug the hole in the engine case. It weighs a few pounds and doesn't provide any useful information. An enduro engine—unlike a road race or scrambles engine—revs low, and the rider can hear what it's doing. Anyway, he shouldn't be trying to get the last 500 revs out of each gear.

If you have a chain guard, you can do without it, though it won't save much weight. Guards are meant to keep chain oil off you and to keep a broken chain from slashing your leg. But broken chains fall to the ground, unless they're

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stiff and rusty; and you're going to be so filthy by the end of an enduro that a little extra oil on the back of your leg won't matter. The best reason for removing the guard is that the wheel will sooner or later pick up sticks or debris and use them to suck the guard into the sprocket, at which point you'll have to remove the guard on the trail.

A chain case (sheet metal or rubber which encloses the chain entirely) is another matter. It is hard to praise too highly the excellence of these devices, or to understand why most manufacturers don't use them. When I was a cycle mechanic, I often saw machines in the shop with 20,000 miles on them, on which the original chain was still good as new. In enduros, a new chain without case will last 1000 miles, and sprockets about twice that. But with a case a chain doesn't pick up dirt, and it's as reliable as shaft drive.

A machine with dual rear sprockets is improved by the removal of the larger one. Even a magician cannot change dual sprockets over from one ratio to another in less than five minutes, and in an enduro there are never five minutes to spare. And in a well laid out enduro, the change would have to be made several times an hour, because time *must* be made up on the smooth sections. A big steel sprocket can weigh ten pounds, all of it unsprung weight (particularly harmful to good handling, because the unsprung parts bounce around, and if they're heavy they inspire the bike to bounce, too).

Lights are frequently removed: half the bikes at enduros don't have them. The tough guys like to screw the license plate directly to the rear fender in a position that makes it as difficult as possible to read. However, lights must be put back on for state inspections, and there's always a chance a cop will pull you over when the enduro takes you out onto



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a highway and say, "Where's your lights, buddy?" It's maddening to have the cops make you sit out an enduro that you came 300 miles to compete in. In the really long runs, like Jack Pine and Little Burr and Greenhorn, you may find yourself starting out in the dark or coming back in it. And many headlight shells contain important instruments and switches that must find a home elsewhere.

Horns are sometimes removed too; but they are needed for inspection in many states, and a good loud one can make passing on the trail much easier. Even if you decide to do without one, that's the limit of what you can take off your enduro bike. The rest of your modifications will be adding on.

The owner of a new enduro motorcycle can be discouraged when he looks in the magazines and finds that there's \$100 worth of bolt-on accessories that will help his machine. He thought he'd bought everything he needed in one package, but many of the bolt-ons really are improvements: notice that many more are sold for the Honda 90 than for the Sachs 125. The Sachs has most of that stuff already. It's a far better machine than the Honda, and it should be: it costs almost twice as much. To bring your Honda—or whatever—up to Sachs specs, you're going to have to lay out some more money; and to bring a road machine or street scrambler up to Sachs specs is almost impossible.

Front suspension and steering are crucial. Even a bike designed with enduros in mind, like the Kawasaki 120 or the Yamaha 125 single, is vastly improved by a fork brace. Ordinarily, the two front fork tubes are kept parallel by the axle, the fender brackets, and the pinch bolts at the

BSA Victor rider John Young at Cayuta, 1968. It rained all day.



Cayuta, 1966.

top and bottom of the steering head. For the road, that will do. For enduros, it won't do, especially after one or two runs. Everything gets loose, so that the wheel starts twisting when the handlebars don't, and vice versa, and tightening the pinch bolts doesn't help. A fork brace, which costs about fifteen dollars, firms up the steering and allows you to travel faster in the rough.

However, a fork brace, which is unsprung, may hit the bottom of the steering head on hard bumps. In that case, you may get away with heavier fork oil, which flows more slowly through the passages in the shock-absorber part of the forks (the dampers). Or you may need stiffer springs, which are made for a variety of models and cost about \$10.

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Do not try putting extra oil in the forks, because that will prevent the suspension from working at all. Even without the problem of the bottoming fork brace, many machines are improved by stiffer suspension: the rider doesn't have to fight the handlebars so much. But enduros last a long time, and a rock-hard suspension will tire the rider, and he will ride less well.

Rake plates are also sold by the accessory houses, because many machines that look woodsie actually have steering geometries designed for the road. The idea of a rake plate is to increase the wheelbase by pulling the tops of the fork tubes back half an inch, which throws the front axle forward about two inches (the pivot point is the pinch bolts at the bottom of the steering head). A long wheelbase handles better in the rough than a short wheelbase; and in addition, sticking the front wheel farther out transfers weight from it to the rear wheel, and makes the machine climb over obstacles more easily. In general, rake plates are available for those machines that can be improved by them. They cost about \$10.

The rear suspension usually needs less modification than the front. A swing-arm rear is standard nowadays, and most bikes come through with shocks that have several adjustment positions. A soft, long-travel rear suspension is an advantage, because the rear (power) wheel stays on the ground a larger percentage of the time, and because the easily tiring rider sits closer to the rear wheel than the front. Do not take up the rear suspension units any more than is necessary to keep the wheel from bottoming on the fender. Non-adjustable rear shocks are usually designed for two-up riding, and are plenty stiff enough for enduros. Beware of rear suspension units that "fit any machine": they may be

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lighter than what's on your bike, but they weren't designed for your bike, or anyone else's.

A seat is more important than anything to a rider's comfort. Most enduro bikes come through with a good seat: soft, wide, low enough to let the rider pedal through swamps without stretching his legs or chafing the insides of his thighs. Do not be tempted to save weight with a bicycle-type seat. Remember that the more comfortable you are, the longer you can endure an enduro, and the longer you can ride it at your peak ability. Of course, if your seat bottoms or is too wide or high for pedaling, you will need to replace it. A dual seat is no advantage: in an enduro, you tend to stay in one upright position; and if you change, it's to stand up on the pegs and let the breeze dry out your breeches on the blacktop.

Handlebars are a very individual matter. The choice is between wide ones that give good leverage for rough going and narrow ones which get between trees without backing and filling. In the West, leverage matters more; but in the East, the narrower the bars the better. In any case, a rise of six inches is plenty. Cross-braced bars, though they bend as easily as others, are easiest to bend back again.

Folding footpegs should be added to any machine (Jawa, Matchless, or most road bikes) that doesn't have them, even if it means cutting and welding. While you're at it, spring-loaded pegs that fold at 45° and return without prodding to their original position are best. You will certainly graze stumps, and folding pegs make the difference between momentary annoyance and a broken foot. A skidplate should also be fitted, if the bike doesn't come with one. It costs about \$12, if you don't make it yourself, and it can save you bashing in the crankcase or scraping off the oil drain-



Sandford Swamp, Jack Pine, 1967. The machine is a Bultaco.

age plug on a rock. For machines with no frame under the engine (Zundapps, Benellis, small Harleys and Hondas) it is especially important, and especially hard to make.

High pipes are sold for almost every machine that doesn't have them in stock. You can even get them for a big BMW (\$200). They don't dent, but they do tend to burn your leg, heat shield or no, and they often force you to an uncomfortable seating position. If the stock low pipe doesn't cut down your ground clearance, and if you don't mind denting it occasionally, why lay out so much money for a big hunk of chromium that really doesn't help you? High pipes are the most over-esteemed and over-sold ac-



Little Burr, Ohio, in 1968, the year when there was so much water that only John Penton finished.

cessory on the market. On the Honda 350, their sharp bends and constricted mufflers cost the engine two horsepower. That's why the newest Honda 350 woods machine has gone back to low pipes, upswept at the rear.

Full knobby tires are essential. Even the semi-knobbies or trials universals that many enduro bikes come through with aren't enough. The back wheel won't dig into mud and pull, and the front wheel won't hold its course on loose sand. Full knobbies give a wobbly feeling on blacktop, and turns must be taken cautiously, especially in the wet: but whatever time they cost on pavement they more than make up

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in the rough, and no serious enduro machine should be without them.

Tire locks (about \$3 each) are also very useful in enduros. A bolt goes through the wheel rim, and a plate behind it clamps the tire bead to the rim. This allows lower tire pressure and more traction without the danger that the tire and tube will slip on the rim and tear off the valve. And in the event of a flat, the machine can be driven surprising distances, because the lock keeps the rim from spinning inside the tire. As an alternative to tire locks, professional racers drill their rims and run sheet metal screws through them into the tire bead. Care should be taken that screws are not so long as to go through the bead and touch the tube.

Some riders claim that, if the front wheel is 18" or smaller, handling can be improved by spoking up a 21" rim. The larger the wheel, the easier it rolls over obstacles, and it gives an inch or two more ground clearance too. But a larger wheel is heavier, puts more torsional strain on the forks, and may bottom out on the steering head or even the exhaust pipe. And if the speedometer runs off the front wheel, it has to be recalibrated when the wheel size changes. It's best to talk to someone who has already tried it on your model before you go change your front wheel. The job costs at least \$50.

The air cleaner on most enduro machines is inadequate. A paper, automotive air cleaner is the best replacement, if a place can be found where it won't be in the way; and the element should be changed often. However, many modern two-strokes get their power from tuning the sound waves in the intake and exhaust systems, and lengthening the intake to include a larger cleaner can cause a surprising loss of power. Experimentation is cheap and interesting.

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A good speedometer is essential for those who aspire to stay on time, and helpful for those who aspire to stay on the course. If your speedometer isn't accurate, it can be recalibrated by a good speedometer shop. If it doesn't have a reset knob that will allow you to wind it forward or backward by tenths at all known turns and checkpoints, you can have the reset installed for \$15.

The most popular bolt-on modification is a larger rear sprocket, or a smaller front one which accomplishes the same thing: makes the motorcycle go slower at any given engine speed. Or it makes the engine work harder at any given road speed. Power is increased too, of course, but most of the time in an enduro the throttle isn't fully open anyway. On a bike like the Yamaha 125 single, where first gear is low enough to pull any obstacle without slipping the clutch, nothing useful is achieved by gearing down. On some other bikes, particularly road machines being converted for enduros, gearing down may be a necessary evil. Many different sprocket sizes are available for every kind of motorcycle, and they are relatively cheap.

If a machine has a gearbox with bad spacing—like the big BSA twins, where third and fourth are too close, or the Kawasaki 175, where first and second are too far apart—changing the overall gearing won't help much. Some companies (Bultaco, Yamaha, Maico) make different gearsets which fit into the same case; but it's much easier to think about gear spacing when buying a bike than to try to change it later. Jawa once made a machine with a transmission sideplate that came off easily and gearsets that slipped in and out in a matter of minutes; but this feature

Bill Baird on his Triumph 500 at Sandy Lane, 1968. There are greasy logs under the water.



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has not been incorporated in production models, perhaps because of cost.

Like changing the overall gear ratio, modifying the engine is easily done; but it's not a good idea: most engines are too souped for enduros when they're in stock condition. Torque (pulling power) is what counts in most situations. You can bolt on a larger carburetor, and ream out the ports to suit it, and get more power at high rpm, because you get more gas-air mixture into the cylinder. But at low rpm the cylinder is sucking very little air, and when you open the throttle of a big carb the air comes past the jet so slowly that it doesn't pick up the gas properly. So the further you open the throttle, the slower you go, until you shift down a couple of times and get the cylinder to sucking a lot of air again.

Raising the compression ratio or installing a hot camshaft or an expansion chamber are other ways of increasing the horsepower at peak revolutions but cutting down the power that is useful in enduros. Probably the only helpful engine modification is to increase the displacement. The Yamaha 125 becomes a 175 with a new barrel and piston, and kits are sold to make Honda 90s into 133s. Most machines can be bored out about 10%, and even that will make a difference in pulling power.

A compression release can be installed on most two-stroke engines. It's for braking, especially when the wheel brakes are wet. It works fine, but a compression release on a four-stroke won't give the same result.

An enduro machine should be protected from dust, mud, water, and stationary objects, such as boulders and trees. It should have good spark plug covers made entirely of soft rubber, not rubber and hard plastic. The high tension lead

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should be new, or next thing to new, even if it means cutting the old one and soldering a new one into the coil. Low tension wires usually are not shorted by water, even when their insulation is cracked and peeling. Spray-on ignition waterproofing, sold in auto parts stores, will not waterproof old, cracked wiring.

The magneto cover or timing case cover must be sealed from both dirt and water. Most small machines have their electrics directly in front of the driving sprocket, separated by a partition in the aluminum cover; and the sprocket can easily throw points-fouling dust through a crack where the castings don't meet perfectly. You can't afford time on the trail to monkey with dirty points: you need that time for riding. The timing case should be sealed to the engine case with gasketing compound.

Snorkels for intake and exhaust are not necessary. A low pipe under water will not stall the engine unless the idle is set very low; and by the time the engine goes above the air intake, it's doomed for other reasons anyway. There's an unwritten rule with layout crews that water hazards shouldn't be more than 15 inches deep; and if you go deeper, it's probably because you didn't take a few seconds to think out the best way through the hazard before plunging in. Water and mud will wipe the oil off your chain and make the brakes stop working, but somehow you can ride on anyway. I'd love to try an enduro bike with a disc brake, but the Honda four is the only production machine that has one, and that's a little heavy for dragging through swamps.

The handlebars and controls should be well protected from brush. One system is to mount an extra set of bars or a steel rod on windshield brackets three or four inches in



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front of the regular bars. Or the bars and all the delicate pivots of brake, clutch, throttle, and choke can be enclosed in a properly wrapped and taped piece of inner tubing. If nothing else, the pivot points of brake and clutch levers should be wrapped with small pieces of inner tube, and the throttle control should be twisted so that the cable comes out from behind—rather than down from—the bars. Some riders run the throttle cable from there over the top of the gas tank and down between the tank and the seat into the carburetor. It's not a bad idea.

The brake pedal and shift lever are particularly prone to bending, because they don't fold up the way good footpegs do. Bending can be minimized by running a steel cable or a lightweight chain from the pedals to the frame tube in front of the engine. The cables should be slack enough to allow shifting and braking, but not enough to let the pedals break off or bend around. Shifters are usually attached to the shift rod by a spline, and can be turned up about 30° from the horizontal. Shifting is then less convenient, but the shifter is less likely to foul.

If the pedal has a heel and toe arrangement, the heel part can be turned around when the toe part breaks off: it's like having a spare shift lever with you that you don't have to carry. But care should be taken that the shifter is pivoted up far enough to keep your heel from hitting and shifting when you stand up on the pegs to power through the rough stuff.

Rubber covers made out of old inner tubes can keep dust out of the rear shocks, or extend the front fender forward

A Honda 305 at Connecticut Hill Swamp, Cayuta, New York. Boyd Reynolds says, "This is the worst mud hole I know of in any run. Cayuta uses it year after year."



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so that sand doesn't fly up at the rider, or extend the rear fender laterally until it stretches from frame member to frame member. The bigger the fenders the better, both for the rider's comfort and for the durability of the machine. Rich Rosenberry uses a five-piece front fender, some of it aluminum and some of it rubber, some attached to the fork and some to the frame.

A rear fender is invariably sprung, and the movement of the wheel beneath it will keep mud from building up in it. But if the front fender is unsprung (attached to the bottoms of the fork legs, and moving up and down with the wheel), it may well pack with mud, especially after you install a knobby tire. There should be at least an inch of clearance between tire and fender, and if you can't get it with longer brackets you may have to go to an unsprung fender, bolted to the bottom of the steering head.

Tail light wires running underneath a rear fender should be rerouted to run on top of it. Even if the tire doesn't touch them when the suspension bottoms, stones thrown up by the knobbies will soon cut them through.

A surprising number of parts fall off even the best touring motorcycles: nuts and bolts vibrate loose, welds crack, rubber straps split, chains and cables break. Anyone who has ridden for a year or more remembers walking back the road, looking for the part that parted from him. A motorcycle as reliable as a Chevrolet is not to be found, perhaps because the engine has fewer cylinders than a car engine and therefore vibrates more. And enduro bikes, which get pounded as well as vibrated, shake apart that

A Husqvarna (foreground) and a Greeves at Connecticut Hill Swamp, Cayuta, 1969.



A member of South Jersey Enduro Riders gets a drink from a checker after crossing Pope's Branch Creek, Sandy Lane, 1969.

much faster, and often with disastrous results. Gene Espo-  
sito's Husqvarna dropped its air cleaner because the mount-  
ing bolt vibrated loose. Gene was doing close to 80 mph at  
the time. Without an air cleaner the engine ran leaner, which  
meant that it soon ran hotter, and when it seized, the back  
wheel, of course, seized, too.

All nuts and bolts that tend to shake loose should be

## *Modifying Your Machine*

drilled and wired, or smeared with locking compound. The ones most likely to give trouble are the ones on the rear sprocket, the axles and the front fork (especially when a rake plate is used, because the changed angle keeps the bolts from seating properly), and the gas tank. The muffler should have contingency fastenings, like bands of plumbing strap. For parts especially likely to break, spares of repair equipment should be carried (see chapter 5).

The final modifications—and not all riders use them, though most of the experts do—are aids to keeping time and staying on the course. A pocket watch with sweep second hand is sometimes mounted on the handlebars, like a speedometer. Sometimes it has a magnifying lens above it. It should be encased in rubber.

Many riders tape their route sheets to the gas tank, but they can also be mounted on a tin can above the handlebars. The can is drilled at top and bottom so that it will turn, and struts go from these pivot points to attach it horizontally to the handlebars. Or the information on the route sheet can be transcribed onto adding machine paper and wound onto what Bill Baird calls “a roller do-dad.”

Suppose the speed to be averaged is 24 mph, or two miles every five minutes. The route sheet reads:

0.8 L  
1.4 L & R  
2.0 R on sand

You set your watch to read 12:00 on the minute you're due to start. Your adding machine paper would then say:

0.8	12:02	L
1.4	12:03½	L & R
2.0	12:05	R on sand



Number 199 (seized engine) and 591 (wet out) call it quits at Pogy Lake Swamp, Jack Pine, 1966.

telling you when you should be at each turn, and allowing you to rewind your speedometer to correct for wrong turns, wheelspin in swamps, and instrument inaccuracy.

A roller do-dad is usually a home-made aluminum case mounted on the handlebars. It has two spools for the paper, and each has a knob outside the case, so that it can be wound forward or backward. It has a window of a magnifying lens. It is *waterproof*.

## *Modifying Your Machine*

But the beginner can keep time fairly well without any device, and even without a watch or speedometer. He stops at every checkpoint, and there he learns his time. He can then ask, "What's key time?" and the checker is obliged to tell him. If he is #28 and key time is 10:45, he should arrive at 11:13. Knowing that he arrived at 11:27 provides him with an interesting subtraction problem that keeps his mind off his bruised ankle and cold crotch for a mile or two down the trail.

For the slightly more advanced rider, speedometer and watch will do. Wind the odometer to zero, and wind the watch to read an even hour (like 12:00) when you're due to start, regardless of what the real time is. At 24 mph, you should cover two miles every five minutes, or .4 mile every minute, and at 2:27 you should have covered 58.8 miles ( $24 + 24 + 12$  miles for  $2\frac{1}{2}$  hours, less 1.2 miles for 3 minutes). If in doubt about your odometer reading, check it against the turns, where mileage is indicated on the route sheet and posted on the arrows.

This system may seem crude, but until very recent years even the best riders used it and got good results with it. There's nothing as foolish as a beginner running down a trail 50 minutes late, taking his hands off the bars to wind his roller do-dad. And as long as you can avoid using that gadget, you can sleep the extra half hour that it would take you to transcribe the route sheet onto tape. Enduros do start ungodly early on a Sunday morning.

# 4

## Maintaining Your Machine

After an enduro everyone is tired: the winner, the high-point class B rider, the low-score finisher, the rider who was an hour late at the third check. Even wives are tired from nervousness and from tramping through the brush to get to the spectator points. Nonetheless, every enduro machine should be cleaned as soon as possible.

Clay is splattered up by tires, to harden on the under sides of fenders and bake between the cooling fins of engines. Even if clay is not the feature of a particular event, many kinds of mud get very hard and very difficult to remove within a few hours; and the combination of mud and engine oil, once dried, is almost as hard as metal. Sand and

## *Maintaining Your Machine*

swamp muck, on the other hand, stay moist for days, causing rust and other corrosion.

Sometimes the sponsors of an enduro provide hoses at the finish line, and you can remove the worst of the crud right there. If not, it's best to load up the machine and head for a two-bit car wash (I keep an eye out for them when I'm *going* to an event, so that I won't be searching on the return trip). The detergent and hot water at great pressure will cut grease as well as mud. Put your boots in, too, especially if they're rubber, and spray them outside and in. If you have no chain case, but do have a center stand, set the machine up on it, stick the spray nozzle into the shrouding around the front sprocket, and spin the rear wheel. You'll be appalled at what comes out.

If nothing else offers, hose your bike down when you get home. It's late by then, and you don't at all feel like doing it; but it may be a month before you take a look at the bike again, and by that time the mud coating may be permanent.

After every enduro where the bike has been in water up to the axles (and that includes every enduro worthy of the name), the wheels should be taken apart and the brakes cleaned out; because water, churned up by hundreds of motorcycles, contains mud and grit that will make brakes fade or grab or will grind shoes and drums to a fraction of their original thickness. Tedious as it sounds, there is no substitute for a thorough cleaning of the brakes, and a sanding of the braking surfaces may be necessary too. Ideally, it should be done immediately after the event, before rust sets in; but human frailty postpones it till a more energetic time, probably a day or two before the next event. In re-assembling, care should be taken to get the speedometer

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drive and the brake linkage back together the way they came apart. It doesn't hurt to grease the brake pivot points and check the wheel bearing grease, though there's usually more than enough.

The shrouding around the drive sprocket (it's usually in one piece with the timing case) which you hosed out a couple of weeks ago should now be removed. You'll find leaves, grass, twigs, small stones, a spent shotgun shell: all matted together in a bird's nest around the sprocket. Another collection point for debris is the muffler, particularly if the machine has a low pipe and has been stalled in a swamp. The best cleaning method is to take the muffler apart and run water through it at high pressure. Again, this is best done right after the last event, but is probably done right before the next one.

Before every enduro, a bike should be checked over thoroughly. Supposing that it was still running at the end of the last event, and that there is nothing definitely wrong that needs fixing, it is still necessary to start by straightening all the bent parts. The shifter, for instance, is probably a different contour from stock, the brake pedal is pushed up, and the front fender is awry. Don't be chicken about bending these back again: use whatever hammers, vises, and pipes are needed. If the parts are about to break, it's better to break them at home in the garage when you can go to the dealer for new ones.

Beyond cleaning and straightening, a good checklist should include:

plugs	tires
points	spokes
timing	chain
valves	gas
air cleaner	oil

## *Maintaining Your Machine*

That may seem a lot, but it can be done in an hour or two on a Saturday, and it will improve your chances of a troublefree ride on Sunday.

When I was a motorcycle mechanic, and a bike was brought in that didn't run or didn't run right, we made it a practice to change the spark plug before we looked at anything else. Plugs are cheap, especially for one- or two-cylinder engines, and they are subject to queer and cryptic ills. They may perform perfectly in a tester and not at all in an engine. But new ones almost always work.

After an enduro, when time is not pressing, plugs should be removed and examined. Like everything else on an enduro bike, they wear quickly; and if they don't need cleaning, regapping, or replacement, they can still tell you things about other parts of the engine. If they have dirt on them, your air cleaner is inadequate, and you'd better find a better one. Plug electrodes should be dark brown: black means too rich a gas-air mixture from the carburetor, and white means too lean. But wait! don't mess with that carburetor yet. That's one of the most reliable parts on a motorcycle, but adjusting it requires care.

Ignition points are another deceptive and troublesome part. The contact surfaces can look whitish or even black and still deliver a good spark. Filing, sanding, or replacing them changes the timing, and it's better to start by slipping a piece of paper between them to see if you can remove a little oil or dirt. Only when that doesn't work should filing be tried.

Spark timing should be checked, though not necessarily adjusted. Every machine is timed differently, and some—like the older BSA 250s and Triumph Cubs—can slip time at idling speed. Parts do wear, and engines run very hot in swamps and sand pits, and timing can change on the best



Kelly Bergman on a Ducati at Cayuta. Bergman, a long-time enduro expert, is close to sixty.

machines, resulting in power loss or hard starting. Timing is most of what makes Japanese two-strokes get out of tune so quickly. If, after reading your owner's manual, you think your timing is off but doubt your ability to reset it, take your machine to a dealer you trust and have him (*not* some short-term employee of his) reset it for you. At its worst, poor timing can cause seizures and burnt pistons.

Valve clearance should be checked routinely, and it should be *at least* as great as the factory suggests. Too much

## *Maintaining Your Machine*

clearance can cause noisy valves, a tiny loss of power, and wear on the valve train over many thousands of miles. Too little clearance can keep a valve from closing completely when it's hot, which will cause a great power loss through loss of compression and will burn up the valve very quickly.

The air cleaner element should be cleaned after every enduro, or better yet it should be replaced. 100 miles of dust and sand in an air cleaner clog it as much as a year of blacktop driving.

And that brings up the carburetor again. It's the easiest of all parts to adjust, so it usually gets adjusted often, even though it doesn't need it. People take it apart to see how it works. People try different settings, looking for improved performance. In the end, they don't remember how it was set in the first place.

If your machine runs too rich, it's usually because the air cleaner is clogged, not because the carburetor is set wrong. If it runs too lean, it's usually because a piece of dirt (from the air cleaner or the gas tank) blocked up a passage. It's not, unless you have modified your engine, because settings or jets need to be changed.

But if you must monkey with the carburetor, here goes. The mixture screw on the side, that easy one to reach, controls gas-air mixture only at very low rpm. It usually has a standard setting (like 1½ turns from the bottom) which is spelled out in the owner's manual. The idling speed—the one carburetor adjustment you might have some real reason to make—may be an upward pointing screw or bolt right beside the idle mixture, or it may be (especially with rotary valve machines) a screw on top of the carburetor. There is always a better way to adjust the idle than to take slack out of the throttle cable.



John Penton on his BMW 250 at Sandy Lane, 1963. This is the kind of sand that bogs a small machine.

Both the easy-to-reach idle speed adjuster and the easy-to-reach idle mixture adjuster have *no effect* on performance above an idle. Gas-air mixture from there up to  $\frac{2}{3}$  throttle is controlled by the needle jet needle and the slide cut-out. Both of these are set at the factory and cannot possibly get out of adjustment, so the only excuse for changing them is to accommodate them to radical modification of the engine, or to a change in altitude of 3000 feet or better. The needle jet needle has three to five grooves in it, and is held by a clip in the center of the throttle slide. Raising the needle

## *Maintaining Your Machine*

a notch richens the mixture, and lowering it leans the mixture (and helps compensate for higher altitude). The slide cut-out is the slice taken from the back of the slide. The larger the cut-out, the leaner the mixture. Some manufacturers make slides with various different cut-outs, to give the high-speed tuners something to worry over. Slide cut-out should *not* be changed to compensate for altitude.

Full throttle mixture is controlled by the main jet, a small jet that screws into the bottom of the needle jet. It has a number on it, and your dealer may sell you eight or ten others with different numbers. But beware: a two-stroke running on gas-oil mix will run faster with a smaller jet (lower number), but after an hour or so of running fast the rings get to sticking in the piston, and the piston gets to aluminum-plating the cylinder. Then the whole engine stops running for good. You could have just as much fun and get just the same results by putting less oil in the gas.

The Kawasaki owner's book, which does not usually indulge in humor, says, "There are many parts on the carburetor which can be adjusted. Although it may seem easy. . . ." For your carburetor mixture problems, look to dirt in your air cleaner or in the jets and passages of the carburetor and fuel line. A lean mixture can even be caused by a loose carburetor, or one that has warped so that it doesn't fit perfectly against the manifold. But the carburetor itself should be kept clean and kept adjusted the way it was when new.

Air pressure in the tires should be checked, and you should own a gauge for it, instead of relying on those unreliable one-arm bandits in gas stations. A stand-up pump will inflate most motorcycle tires with a dozen lunges. If, however, a tire has become completely deflated in a month

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or less, the tube should be patched or replaced. It will go flat much faster the second time, and faster under use than just sitting. A flat tire in the woods is a woeful thing.

The less pressure, the better the traction in slippery stuff. But the less pressure, the greater the chance of the tire spinning on the rim and tearing the valve off; and at very low pressure, a bump can momentarily squash the tire, pinching the tube. It's best not to cheat more than a couple of pounds on the manufacturer's recommendations. Anyone starting an enduro with less than 18 pounds in the front tire and 22 in the rear is asking for trouble.

With the machine on a stand that takes the weight off the wheels, every spoke should be checked, either by wig-gling it or by sounding it with a wrench. If it is not touching another spoke, it should sound a clear, musical note, not a dull one. It isn't necessary to have all the spokes ring the same note, but all should ring a note of one kind or another. Those that don't should be tightened until they do. Don't worry about getting the wheel a little out of round: it probably is anyway, and a perfectly round wheel is more suitable for a road race than for the woods. While you're checking the spokes, look over the sidewalls and tread of the tires for cuts; the last enduro may well have crossed a dump or dropped into a ravine full of sharp rocks, and you did not even notice it.

The chain—if it has no case—will need adjusting at the end of every event, and at the lunch stop too during longer ones. With the machine off its stand and you sitting on it, one length of the chain should have almost an inch up-and-down play at its center point, but not more than an inch. However many turns you take up on the chain side adjuster, you should take up the same amount on the other

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side, to keep the wheel lined up with the frame.

The best chain will not last 1000 miles on an enduro bike. If, when new, it has the whole of the adjustment to travel, it should be replaced when the adjustment is used up. By that time every link is stretched and every bushing worn, and if you take out a link and continue to use it the sprockets will wear rapidly, and the day will come when the chain will break in the middle of an event.

Oil the chain. The heavy goo in the little tubes is best for road machines, but it picks up grit too readily for enduros. Spray-on oil seems to disappear almost at once. The oil that comes in the spouted can, where you drip a little onto each link, works best. It comes out of the can thin, but it contains a vehicle that dries rapidly, leaving the lubricant like paint on the chain. Several manufacturers make it, and most dealers carry it.

Start every enduro with a full tank of gas. Figure that your bike will get about  $\frac{2}{3}$  the mileage in the woods that it does on the highway: that is, 40 mpg instead of 60, or 30 instead of 45. Gas weighs less than eight pounds a gallon. Don't just allow enough to get you to the gas stop, or to lunch, because you may get lost and go 20 extra miles.

Engine oil should be checked, and transmission and clutch oil too, if they have separate reservoirs. A whole quart of oil weighs less than two pounds, and there is nothing to be gained by starting out low, especially as your bike, working hard, will use up oil fast in the woods. And since there is hardly a motorcycle that doesn't leak, you may find that your oil tank or your crankcase, which had plenty of oil when you last rode the bike a month ago, is now low. However, in four-stroke motorcycles with separate oil tanks (e.g., Triumph, NSU), the oil may simply have



Professional racer Sal Scirpo turned to enduros, won the Jack Pine in 1955 and 1959. Here he plows his Harley Sprint through white ash sands on the second day of the 1969 Jack Pine.

leaked from the tank past the check valve and down into the crankcase; and starting the engine will pump it back up again.

More baffling are the oil reservoirs that *gain* oil while sitting. Clutches on BSA twins do it, and so do crankcases on Ducatis. It's gas that has leaked out of the tank through bad petcocks and mixed with the oil. It should of course be replaced with new oil.

In addition to following the checklist, and in addition to cleaning and straightening, you may need to do some major

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work on your bike. Perhaps, in the afternoon of your last event, you were running late and tired, but just the same you were determined to make up the time:

The trail is loose, fine sand: two ruts cut by jeeps, with a grassy crown between. It winds through a pine wood, a route blazed centuries ago by teamsters who hacked down the little trees but avoided the big ones. At 30 mph you feel comfortable on it, but at 30 you aren't making up much time. At 40, plainly, you're riding over your head; but the miles click up fast on the odometer, and you did manage that last turn all right, with an assist from a mossy bank firmed up by roots. You decide to hold it on 40, just for a while.

Then the trail forks, and the arrow points left, but you're in the right rut because of those left-hand brambles a while back, and the right rut dissolves into a sea of sand on which you see a dozen motorcycle tracks, weaving like the wakes of keelless ships. You're going too fast to drag your foot or steer into the turn, so you steer away from it, knee the tank down with your right leg, twist the throttle hard on, and hope.

For a moment it seems that it's going to work. The back wheel goes out to the right and you see yourself crossed up, turning, trailing a plume of sand, like Markel—no, better make it Rayborn, he's more the feet-up style. But then the back wheel goes out too far, and you let off on the gas to correct, and the machine is suddenly, sickeningly upright and heading for that big pine tree in the apex of the fork. It's all happening fast, but you seem to have plenty of time to think, and you notice with queer detachment that the tree already has bark off both sides of it. Your fingers reach instinctively for the front brake, but you



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know better than that: you bail off.

You came out of that one pretty well. As soon as you stopped rolling, you jumped up and ran to the machine. You squeezed the clutch and picked it up so quickly that the engine didn't even die. You found neutral, winked until your helmet was out of your eyes, and spat sand and a little blood. You sat the machine to stop your shaking and revved the engine a couple of times. What the hell! Only when you started off again did you notice that the handlebars weren't perpendicular to the trail any more, and the front suspension wasn't working much. At 20 mph, you made it to the next check, but a swamp put you over your hour at the following one, and the checkers directed you back to the start-finish line over blacktop.

Once a fork is bent, a machine will never handle exactly the same again. It's not as serious as a bent frame (*that* usually happens in a traffic accident, not an enduro), but it's plenty serious enough. If you don't want to sell the machine—and you can't afford to sell an enduro machine every time you bend the fork—you might as well fix it yourself instead of taking it to your dealer who will charge you \$20 to \$50.

He'd use a hydraulic press. He'd disassemble the fork by draining the oil in both legs, removing the front wheel and fender, loosening the pinch bolts, and sliding the fork tubes out of their yokes. He'd take the unsprung tubes (they're what always bends) out of the sprung, lower legs by clamping the bottom of the leg in a vise and turning off the chrome nut at the top of the leg with a special tool or a pipe wrench *wrapped in cloth*. He'd lay each tube on a

Seven-time Grand National Enduro Champion Bill Baird on his well equipped Triumph 500 at Sandy Lane.

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flat surface, see where it was bent, and press it out, using blocks of wood to prevent dents wherever metal touched the tube.

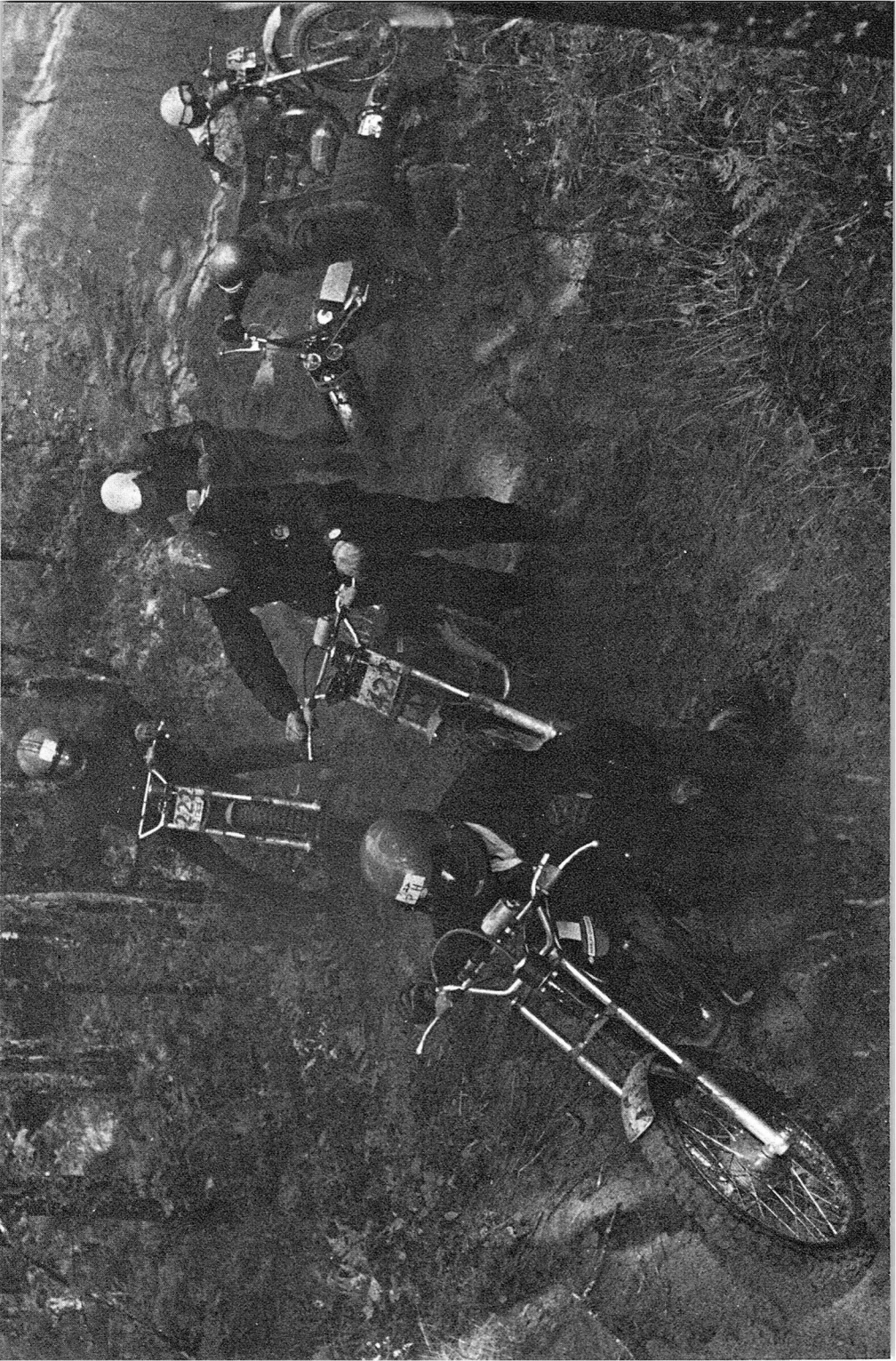
But at home you may not even need to disassemble your forks to fix them. Forks bend at their weakest point, and if an equal force is applied in the opposite direction, they should bend back at the same point. Remove the wheel and the fender, if it is unsprung, and put the axle back into the forks. Put the grounding point of an automotive bumper jack against the crankcase, and the hook part that's meant for the bumper against the axle. Jack it. You will have to go farther than a straight line, because the fork tubes are steel and will recoil some part of the distance they have been bent out.

The jacking method may not work if the bike hit the pine tree so as to bend one fork tube more than the other. Then it is necessary to disassemble the forks as your dealer would do. If the bend is so bad as to be a kink or dent, you can't fix it and you need a new tube. If it's a mild bend, lay the tube, bend up, on a firm structure about 30 inches high (I use a garden wall) with a wood block under each end of the tube and another on top of the bend. Give the third block a good belt with a sledge hammer or the back of an axe. Sight the tube, or lay it on a flat surface, and repeat the belting until the tube is as straight as you can get it.

A severe fork bending may also bend the yokes, including the rake plate you just got done buying. It's very hard to look at yokes and tell whether they're bent, because an

John Penton, 1969 Grand National Enduro Champion, at the ash pits, Little Burr, 1966. Penton has won Little Burr five times, Jack Pine four times, Sandy Lane three times.





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eighth of an inch twist in them is magnified by the length of the forks. If straight tubes and straight handlebars do not straighten out the steering, you may want to try buying new yokes. But remember that a fork once bent will never be perfect again; and anyone who rides enduros long enough bends the fork.

An Earles fork, on the other hand, is almost impossible to bend; but once bent it cannot be straightened by a home mechanic, or even by a dealer. It must be replaced or sent away to a frame straightening shop.

Maybe, instead of bending the forks at the last enduro, you seized the engine. You could have done that by gearing it down and driving it fast, or by paying too little attention to the oil, or by adjusting the carburetor too lean or the ignition too retarded, or simply by buying a machine—like the Yamaha 250 or the Matchless 500—that seizes readily.

A seized engine will usually free up and run again when it has cooled off: one of my fellow Meteor M. C. members seized a Harley Sprint in a reliability run, squeezed the clutch for a moment, and was able to let out the clutch and ride on before he lost his momentum. Whether it frees up again or not, any engine that seizes should be taken apart and inspected as soon as is practicable. The piston in a motorcycle is much more accessible than the piston in a car, because the cylinder and crankcase are separate parts. There's no reason why you shouldn't take a look at it yourself, as long as you don't have an overhead camshaft machine (Honda, Ducati) where removing the head disturbs the valve timing.

Start with an engine that's clean outside, at least. Drain

The California team (the Ekins brothers, *et. al.*) on specially prepared Harleys at Block and Tackle Hill, Jack Pine, 1969.

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the gas and remove the gas tank, even if there's room to get the head and cylinder off beneath it, because with the tank off you have a much better chance to see what you're doing. Disconnect the carburetor, if it's attached to the cylinder, and let it hang by the choke and throttle cables. Disconnect the spark plug lead and the exhaust pipe. Don't lose the carburetor and exhaust gaskets, and don't play with the carburetor.

On a two-stroke, the nuts that hold the head down are visible, but on many four-strokes, there may be some outside the valve cover and some inside. Frequently the bolts that hold the rocker arms down also help hold the head on. In loosening them, try to get a feel of how much pressure holds them on, so that you can put them back with the same pressure. If you have to remove rocker arms, make sure which one is which by putting tags on them. Push rods, which will lift out once the rocker arms are removed, should also be tagged. Remember that a motorcycle head should come off very easily, and if it needs prying, that's because it has some bolts you haven't found yet.

When the head comes off, remove the gasket, after marking how it sits and which side is up. If it's whole, clean it and reuse it, because a new one will shrink and the old one won't. Draw an arrow in the carbon of the piston top, pointing forward.

If the engine is still seized, pour penetrating oil around the piston and let it sit for several hours. If it still won't turn, rap on the piston head with a block of wood; and if that doesn't work, loosen the cylinder so that you can turn it around while rapping. Only as a last resort should you

Cooperation on a steep hillside. The pushed bike is a Jawa 350.





Doug Wilford pushing his 125 Penton at Back Mountain, Pennsylvania, 1969. Wilford won a National in 1969, but not this one.

try to chisel the piston out, because broken pieces of it may fall down into the crankcase where you can't reach them.

The cylinder comes off by removing the nuts at its base, or it slides off over long through-bolts that also hold down the head. There's a paper gasket under it, but that almost always gets torn, and must be replaced. When the cylinder is half way off, before the piston has come out of it, stuff rags in between the connecting rod and the crankcase, so that broken rings won't fall down.

After seizure, rings are often broken, and are often stuck in their grooves (called lands). Rings are cheap, so pick

## *Maintaining Your Machine*

them out of the lands, and don't worry about breaking ones that are still whole. Just be sure that you have enough pieces to account for a full set of rings, because if you don't the broken pieces may well be in the crankcase. Before new rings are installed, the lands should be gouged out (There may be carbon in them, or dirt, or extra aluminum) so that the new rings won't stick. The best tool is a broken piece of old ring.

If the lands are damaged, the piston must be replaced. To remove it, take the clips off *both* sides of the wrist pin and push the wrist pin out, applying the same pressure to *both* sides of the piston, because the connecting rod will bend easier than you think. Special tools are made for removing wrist pins, but usually you can do without them. If the pin is tight, heating the piston with a propane torch will make it slide out much easier.

The cylinder may be damaged, as well as the piston. If it's iron, or has an iron liner, the damage is probably limited to a little aluminum plating from the piston, and that can be removed with fine emory paper. If it is badly scored, perhaps from a broken ring, it must be bored out to suit a new, larger piston. This is an excellent time to consider boring it to fit the largest piston you can buy, though you must remember that if you seize it and score it again, you'll be in for a new cylinder. Cylinders are three or four times as expensive as pistons.

If the walls are chrome plating on aluminum (e.g., Bridgestone) and the chrome has peeled, the cylinder must be replaced. Once I sanded a Bridgestone barrel, richened up the oil pump (it had been messing with the oil pump that got me in trouble in the first place) and drove another 400 miles on it; but only because it seized in the Arizona

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desert, and the nearest new cylinder was in Los Angeles.

On reassembling, all parts must be *clean*, and the rings and cylinder should have a light coat of oil. A new cylinder base gasket goes on, with or without gasketing compound, as you like. It may have oil holes, which should match the oil holes in the crankcase. The rings can be slid over the piston by holding the ring ends with your thumbs and the opposite side of the ring with your index fingers and pulling the thumbs gently outward. Sometimes the bottom ring will differ from the others, and sometimes the rings have top and bottom sides. Ask your dealer when you buy them.

The lands of two-stroke pistons have warts in them, and the rings are notched to fit those warts, so that the rings won't turn and catch in the ports. Four-stroke rings turn freely while the engine is running, and it doesn't matter where the ring gap starts out. The cylinder slips down easily over the piston, without a ring compressor, because the bottom of the cylinder is flanged.

To check the valves of a four-stroke, hold the head upside down with one valve head horizontal and pour a little gasoline on it. The gas shouldn't leak through between the valve and the seat. If it does, it's best to take the whole head to a machine shop (*not* to a dealer, who will just send it to a machine shop himself). For a few dollars, they'll give you a better valve job than you could do yourself in five hours.

The engine then goes back together the way it came apart: gaskets, washers, everything. Ideally, there should be *no* parts left over. Make sure that the carburetor slide is plumb, and that all gaskets—especially the exhaust—seat properly. Valve adjustments should be checked. The engine



A Greeves checking in at Little Burr.

should run like new, and should be broken in for 20 or 30 miles to seat the new rings.

Major engine work (clutch, bearings, transmission) is better left to a dealer, unless you have a Jawa, which comes apart without special tools. Special tools are needed to take apart the crankcase of most motorcycles, and their cost is not justified by one using. In addition, almost all motorcycles have horizontally split cases, so that when they

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come apart, the transmission as well as the crankshaft spews out on the floor: a cornucopia of gears, shims, shafts, and bearings. If you take all these parts to your dealer in a bucket, he'll be justified in charging you more to reassemble them than he would have charged to do the whole job. And many adjustments in the crankcase, such as crankshaft endplay, are crucial and persnickety. Best leave them to him.

A few more things that may have made your engine stop running in the last event: you may have swallowed or bent a valve, or you may have sucked in water and bent the connecting rod, or you may have worn out the rings to the point where you have no compression by sucking in air through a bad cleaner. Again, a good rule of thumb is to try fixing it yourself if the trouble is in the top half of the engine, and leave it to your dealer if it's in the bottom half.

But perhaps you didn't have engine trouble: perhaps you just bent or despoled a wheel. You can fix that yourself. Take the tire, the tube, and the rubber band under the tube off the wheel; and, if the rim is bent, or if even one spoke nipple has pulled out through it, buy a new rim. Salvage what old spokes are still straight, and buy new to replace bent and broken ones. Most motorcycles use outer and inner spokes with differing head curvatures, and you should distinguish between them.

Lace in the new spokes. If you're starting with a new rim, you can get the lacing pattern from the other wheel. Using a screwdriver, take up all the spokes a little bit at a time, until there begins to be tension on them. The same number of threads should then be visible above the nipples on all spokes; or, if you look at it from another angle, the spoke ends should all be the same distance from the bottoms of their nipples.

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Put the wheel into the frame and tighten the axle bolts. Out of scraps of wood make a stand which will sit on the floor and have a crayon pointer at axle height. Spin the rim and slide the crayon pointer in until it touches at some point in the wheel's revolution. That will be the high spot: spokes opposite it should be loosened a turn or two, and spokes near it should be tightened. Repeat this until the wheel is pretty much round before you slide the stand in from the side to adjust wobble the same way: loosen the spokes on one side at the point where the crayon has marked the rim, and tighten the spokes on the other.

Wire wheel lacing shops work exactly this way, except that they use a more sophisticated and accurate machine than your crayon pointer. For a high-speed road motorcycle, wheels should be professionally trued. For enduros, where wheel out-of-round and wobble can be as much as  $\frac{1}{8}$ " without affecting the stability of the bike, a careful handyman's job is good enough. Remember that after a day in the woods no wire wheel is perfectly true anyway. By checking the spokes regularly before each enduro, you may keep yourself from having to do this job again.

Most times, when a motorcycle fails us, it's more difficult to find out what's wrong than to fix it. That's especially true in enduros, when the rider's mind is occupied with staying on the course, with making up that eight minutes he is behind, or with covering those last 20 minutes to the finish before his hour catches up with him.

If your machine stops running within a few hundred yards of the finish line, it's best to jump off and push it across. If it stops much farther out than that, it's best to get off, put the bike on the stand or lean it against a tree, and light a cigarette. The break-down is going to cost you cigarette time anyway, and it can easily cost you more if



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you tear into the bike's innards with your mind still full of those eight minutes or those 20 miles. So pull off your gloves and unzip your jacket. Take off your helmet and scratch your sweating head. You're going to be here a while, and if you look at a wildflower and empty your bladder now—instead of fuming—you're going to feel better and ride better when the machine does run again.

Besides, many ills of a motorcycle are cured by having a nice rest. If it was only wet from the last creek, the heat of the engine will dry the wires in a couple of minutes; or if you were running it so hard that electrical parts got hot and quit, time may cure them too. Or maybe the gas line, partly clogged, wouldn't deliver fuel fast enough. If the machine restarts after its rest, by all means get on it and go; and if it shows signs of failing again, nurse the engine by shifting sooner than you ordinarily would and keeping the revs down. It won't cost you as much time as you think: not as much time as another break-down.

If it kicks over but you can't feel any compression, try bump starting it (use second gear), because it may have just enough compression to fire when turned over fast. If it doesn't, you might as well start walking to the nearest checkpoint, because it isn't going to get any better, and it's most unlikely that you can fix it on the trail.

Bump starting is a very useful technique. If the engine has stopped because you've fallen, and it isn't ready to start again as soon as you are, it's just flooded with gas. Bump starting with the gas petcock off and the throttle all the way open will usually cure it, if your legs and wind last

Runner up for Grand National Enduro Champion in 1969, Jack McLane, on a Honda 350 at Sandy Lane.



## *Maintaining Your Machine*

long enough. Once an engine fires after flooding, the bike should be leaned over to whichever side the carburetor or the float chamber is on, and held there until it revs up and runs smoothly again.

When I was a mechanic, and was entrusted with a motorcycle that wouldn't run, my long-suffering boss would look at me sadly and say in a voice that made it clear he knew I wasn't listening, "Now just look for something simple this time, won't you?"

Of course I never did. I took as much apart as I could, because I wanted to see how it worked. I learned a lot that year, and you may want to learn too; but I was in a shop—warm, dry, and clean—surrounded by tools and supervised by a man who had been a mechanic for 20 years; and you, presumably, are half way up a muddy hill, somewhere in Schuyler County, New York. You have only a handful of tools; you're cold, wet, and dirty; and it's starting to drizzle. So look for something simple, especially since you must work carefully to keep the dirt on you from getting into the engine and making it worse.

Are you *sure* that you aren't out of gas? If you're only pretty sure, pull the fuel line off and see that gas runs out on the ground.

The next most likely problem is ignition. Is the spark plug lead shorting because it's wet or just plain old? If it is, taping it may help.

Take a *new* spark plug from your pocket, connect the lead to it, and ground it on the engine. Kick the machine through. If a visible spark jumps across the plug, you're going to have to take out the old one, even though that

Tom Jones (left) and his brother Arthur man a check at Quaker Bridge, Sandy Lane, 1964. The machine is a 350 BSA.

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involves you in the very great danger of dropping dirt into the spark plug hole. Such dirt will cause a plug to foul again quickly.

Loosen the old plug and turn it out most—but not all—of its threads. Get your face up as close to the plug base as you can without singeing your mustache and blow hard. Look to see if there is still much dirt around the plug, and if so, blow some more, or poke it with a stick and blow. When you turn the last threads out, remove the plug cautiously, so that your hand doesn't brush the bottom of the tank, knocking down more dirt.

You can examine the old plug if you want to, but it's best to put in the new one, no matter how the old one looks. *Do not* kick the engine over with no plug in it, because that is a very easy way to suck dirt in. With the new plug in and the lead connected, see if the engine will start. If it does, get going. You're not trying to learn mechanics now; you're just trying to finish this damned event.

If, when you kick it over with the new plug held against the engine, it doesn't show a spark, it helps to know whether your bike has magneto ignition (perhaps with a battery for the lights) or battery and coil ignition. With the latter, you may well have a dead battery caused by a bum generator or a bad battery connection. Try the lights or the horn. If they work, or if you have magneto ignition (points usually inside a flywheel), you'll have to remove the timing cover, breaking its seal. Is it dry in there? Are the points opening and closing when you turn the engine over? If they are, run a very clean piece of paper or rag between the points. Make sure no lint gets stuck in there. Try kicking again, and see if there is a spark.

If there is still no spark at the plug, battery ignition

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should yield a spark at the points when the ignition is on and the points are opened and closed by hand. If it doesn't, check all the ignition wire connections: battery to switch, switch to points, points to coil and condenser, coil to plug. If they are good, and there's still no spark at the plug, it's the coil or condenser, and you can't fix them on the trail.

If, when you put in a new spark plug that shows a good spark, the engine won't start, the problem must be gas. Assuming that your choke and throttle cables haven't broken, carburetor failure is usually in the float chamber. Jets can clog enough to make a bike run badly, but seldom enough to make it stop. With as clean hands and as clean tools as possible, take off the float chamber. Be sure that little brass parts and fiber washers don't drop through your fingers and bury themselves in the mud. See that the needle valve isn't clogged or stuck, and that the gas runs freely past it and through the float chamber. Check the jets too, while you're at it: they're easily reached now, without taking the whole carburetor off. Put the float chamber back on, with all gaskets, washers, and small brass parts where you found them.

To recapitulate: when your enduro machine fails you during an event, you should check, in the following order:

gas supply	battery (if battery ignition)
spark	points
spark lead	wiring
spark plug	gas feed

With no more than this, you will be able to find and fix the trouble 90% of the time.

# 5

## What To Wear and What To Carry

Few enduro riders worry about the clothes they wear on the trail. John Penton likes the red, white, and blue helmet (the *Easy Rider* helmet was copied from it) that he wore in the International Six Day Trial, and Bill Baird used to sport a set of matched, colored leathers with a waiter's stripe down the side of the pants. These two riders can get away with costumes which would expose a novice to ridicule. The kid who shows up with a braid glued to the back of his helmet and a big emblem saying "Honda Eater" will look doubly foolish when, 20 miles from the start, he finds himself lying on his back in a swamp, eating Hondas. It's better to dress for comfort and protection.

## *What To Wear and What To Carry*

Helmets are standard now. Canvas or leather flier's helmets used to be standard, and Paul Brumfield, the long-time layout artist of *Sandy Lane*, wore one as recently as 1968. But now even he has gone (grudgingly) to fiberglass. Fiberglass can prevent a broken head in a spill, and in brushy sections the rider can lower his helmet and plow on through with less chance of cuts and bruises.

The most thorough kind of helmet looks like a bucket set over the head and coming down almost to the shoulders all the way around. It's completely fiberglass, except for a plexiglass window in front. It's worn by more and more professional racers for dirt tracking and road racing, and occasionally one appears at an enduro—its faceless, nameless rider glowering inside it like a tickled conch. Probably it offers the greatest protection, but it must be claustrophobic: the next worst thing to being in an automobile. It is made by Bell, and it costs plenty.

Full-coverage helmets cover the ears and the entire back of the head, leaving the face and chin exposed; half coverage helmets cover only the top of the head: a hemisphere with the ears and back of the head exposed. Full coverage costs from \$25 to \$50, half coverage from \$10 to \$30. Full coverage is warmer, more protective, and doesn't bobble around so much on bumps. Half coverage is cooler, lighter weight, and easier to take on and off. You hear and see more with a half coverage helmet, so that you're more aware of what your machine and the machines around you are doing, and of the woods and fields you're riding through. Whatever helmet you buy, be sure that it meets "Z-90" (U.S. government safety) specifications.

Eye protection is essential, against tearing, against brush, and against sand and mud thrown up by knobby tires.



The rules of the Berkshire Trials allow this Bultaco rider to arrive early at the check without penalty. He is fixing his tire while waiting for his number to come up.

Glasses aren't enough, even with shatterproof lenses and an elastic, because they sit too far away from your face to keep the grit out. Most helmets come with snaps to which two kinds of face shields can be fitted: bubble shield (compound curve, \$6) and flat (simple curve, \$2.50). Both kinds scratch easily, and are usually done for after an enduro or two. They also steam up quickly whenever you sweat from pushing your machine through sand or swamp.

To obviate steaming, a frame is made which snaps to the helmet, and either kind of shield can be snapped to it. The "flip shield" can then be pivoted up to rest on the top of the helmet. However, flip shields are not designed

## *What To Wear and What To Carry*

to be smacked by passing branches, and they soon take to flipping more often than is wanted: sometimes up over your head, sometimes down into your neck. Either way can be distracting.

I prefer goggles. Dozens of kinds are made, but the elaborate and expensive kind (they can cost as much as \$10) are heavy, and have heavy frames which narrow the vision, while bubble goggles (\$1.35) distort the vision, and their sharp edges cut into the forehead and the bridge of the nose. Cheap (\$1.50) goggles made of a flat piece of plastic, bent and riveted, are the most comfortable. They are very light, and are edged with a strip of foam rubber. Their elastic allows them to be pulled up on top of the helmet when necessary. Like shields, they scratch readily, and a full season of enduros and road riding may use up half a dozen pair of them.

Goggles and shields come in all colors. For enduros in wooded country, clear is best, even if you have to squint in the sand pits. If you wear green or blue, you'll be more relaxed in sand, but you'll be suddenly blind when you hurtle out of it and into the woods. And even clear goggles aren't absolutely clear after a mud hole or two. Better see as much as you can.

For desert and open-country enduros, some kind of tinted lens may well be an advantage. Red and yellow lenses are meant to increase vision, especially in the evening and on cloudy days, by opening the pupil farther. They are not suitable for enduros.

Gloves must be worn, no matter how hot the weather, to protect the hands from brush. Even with good gloves, hardly anyone finishes an enduro without cut and bruised knuckles. For really cold weather, leather mittens with



Bill Baird, in semi-retirement with a bad leg, rode only three events in 1969. Here he waits his turn at the beaver dam, Jack Pine.

## *What To Wear and What To Carry*

sheepskin liners (\$15) are best. You lose some sensitivity with mittens, it's true; but if your fingers get numb in gloves, how much sensitivity do you have? In warm weather, unlined leather gloves—heavy ones, not automotive driving gloves—will do, though motocross gloves are becoming increasingly popular. These cost about \$9, and have a welt of foam glued to the knuckles of each finger. Riders who have them say they really help.

Footwear is one of the great, unsolved problems of enduro riding. Whatever you wear, count on it that your feet will be wet before the end of the day. Don't wear high, loose-fitting rubber boots unless you cut some sizeable holes in the bottoms to let the water out. Full, they can add many pounds to your weight, and make shifting and braking awkward. However high they are, the water will sooner or later be higher.

In any AMA sportsman competition, ankle coverage is required, and you would want it so. There's something to be said for ordinary eight or nine inch work shoes, which are light and comfortable. They do get wet immediately, but there isn't room in them to hold much water, let alone sand and gravel; and because you *know* they're going to get wet, you don't worry about it, and you don't pussyfoot in the first few mud holes.

Some riders wear high, laced leather boots, motocross or hunting style. They give good brush protection to the calf, but they are somewhat awkward, very expensive (\$30 and up), and not—in spite of what people say—waterproof. An economical solution is laced rubber boots (\$8) which come half way up the calf and are waterproof till the water tops them, which may be half the enduro. Even then, with pants tucked into them and the point sealed with 3" adhesive

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tape, you get wet but you don't drown. This taping, which is being used by more and more riders, should be done sitting down, not standing up; otherwise you may not be able to sit down when it's completed.

Full leathers, pants and jacket, are standard enduro wear, and they may be the best. Leather is certainly best for spills and for brush. But leather can be very hot, even though it breathes better than plastic, and when it gets wet it weighs a ton. A good set of leathers costs over \$100.

Several English companies make "trials suits" of cloth impregnated with plastic or rubber. They are lighter than leather and looser fitting; but they tend to be hotter in summer and colder in winter. They are said to be thorn-proof, but they come with patching kits. The rubber or plastic sometimes cracks after a year or two. They cost about \$60.

Canvas coveralls can be bought cheaply from surplus stores. Penton has worn them, and Rich Rosenberry always does. They are lightweight and expendable, and though they wet quickly, they dry quickly too. In rain they are worthless, but in rain nothing is very good. Plastic rainsuits, particularly, are sweatboxes, and have torn to pieces after a few hours' riding.

When workpants or bluejeans start to look like cheesecloth in the seat, that's a good time to wear them in an enduro. On top, an old leather jacket can be worn—one that's too scruffy for the road. The jacket will survive the run, but the pants can be thrown out, which cuts down on maintenance. Whatever you wear, you should have a complete change of clothes waiting for you at the finish line.

Underclothing depends on the weather. It's better to be chilly for the first hour of the morning than to sweat all



This girl rider got through only one check at Sandy Lane, 1969. There are no good girl riders around today, but Carol Knoss used to be very good, and Dot Robinson used to finish enduros driving a Harley 74 with side-car.

the day. One rider, coming through a swamp near the start of Delaware Valley's annual spring enduro, found a perfectly folded, perfectly clean set of quilted long underwear sitting on a stump. It may still be there. It's hard to dress

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properly for enduros, because they last so long that the day warms and cools again, and because you need much less clothing to pull your bike out of a swamp than you do to breeze down the blacktop.

It's better to wear layers than to wear one heavy garment. Two regular sweatshirts give about as much warmth as one thermal sweatshirt, and one shirt can be peeled off and discarded when the day warms. Don't wear longjohns or sweatpants under your outer pants unless you're very sure it's going to be cold all day long. To take them off you must unlace and perhaps untape, and then relace and retape. The whole process may take 15 minutes, and even at the lunch stop you can spend your time to better advantage than that.

Many clubs give their members racing vests as an advertisement and to promote club spirit. The vests are sometimes vinyl and sometimes cloth. Sometimes they button or zip, and sometimes they pull on over the head. However they are made, they have one thing in common: they are a damned nuisance. They keep you from unzipping your jacket when you get hot, they make it awkward to reach into your pockets, and usually they are too small for you. Sew your club's name or insignia onto the back of your jacket or coveralls. Don't let anyone talk you into wearing a racing vest.

If you still have the tool kit that came with your bike when new, and if it's any good, you should certainly take it along. I once encountered a novice on a big Triumph who had gotten half way through the morning of Pine Hill enduro only to have his throttle jam. "Need anything?" I said.

"Yeah," he said incredulously. "Have you got a screw-

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driver?" He hadn't dared hope that anyone would be carrying such a thing. It would be funny if it didn't happen so often.

The factory tool kit is good because it often includes tools—such as metric Allen wrenches—that are unique to your machine, and because it usually fits snugly into a compartment where you can forget about it till the time comes. Any other tools you take should also be carried on the machine, not on you. If you can't tape them to the frame, make a special bag or compartment for them. Pockets full of parts and tools are clumsy, and can be dangerous in a spill.

Check over the tool kit. At a minimum, it should include: spare ignition key, spark plug wrench, pliers, adjustable wrench, screwdrivers (including Philips, if you need them), jackknife, and chain breaker.

Many riders also like to take a set of visegrips, which can take the place of an adjustable wrench, if you don't mind chewing up the nuts and bolts on your machine. Visegrips are useful for straightening fenders, pegs, pedals, exhaust systems; but they are heavy and awkward to carry, and riders who just clamp them onto the frame in one place or another usually lose them before the end of the day.

A chain breaker is a tool many riders don't know about. When a chain link breaks, it is not necessary to grind the pins off and drive them out with a punch. A chain breaker, which costs about \$3 and need not be large or heavy, has a clamp and punch arrangement that is quick and easy to use, and it infallibly works, on the trail or anywhere else. Don't be caught without one.

Naturally, the smaller a tool is the easier it is to carry. Screwdrivers of all widths can be bought in stubby lengths,

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and they work fine. An adjustable wrench can be improved by cutting several inches off the handle. However, pliers that are shortened lose much of their usefulness.

You will need to have some parts with you, and these too are better carried by the machine than by you. Standard practice is to carry a spare of the part that busted last time and put you out of the running. You should also have: several *new* spark plugs, clutch lever, clutch cable, throttle cable, a few inches of extra chain, and master links.

An extra inner tube and the air pump and tire irons that go with it are too cumbersome to carry, and the time it takes to change a tire in the woods is enough to put you over your hour. It doesn't hurt to have tire repair equipment waiting at the lunch stop, but in the woods you're better off with 20 feet of  $\frac{1}{4}$ " rope. It can be used, when you have a flat, to lace the tire to the rim. If the rope is tough and doesn't wear through, you can travel 50 miles on such a lash-up.

In addition to tools and parts, it is often useful to have the following general supplies in approximately these quantities: 20 ft.  $\frac{1}{4}$ " rope, 20 ft. baling wire, 10 ft. low tension electrical wire, 3 ft. plumbing strap, a few square inches fine emory paper, 1 roll adhesive or friction tape,  $\frac{1}{2}$  doz.  $\frac{1}{4}$ -20 nuts & bolts, and a clean rag.

That sounds like a lot, but the rope, wire, and plumbing strap can be wrapped around the machine (around the tail light bracket, the seat struts, or the fork crown) and forgotten for many enduros at a time. The nuts and bolts, emory paper, and tape should certainly fit into the tool kit. The rag can go in your pocket.

The rope is for towing (illegal among contestants, but

## *What To Wear and What To Carry*

often done by dropouts who just want to get home) as well as for tire repair. The baling wire, nuts and bolts, and plumbing strap can fix almost anything: a seat, a muffler, a gas tank, a fender. Of course, it's not a permanent repair; but on the trail you're not thinking beyond the finish line of this particular run. The tape, in addition to piecing together electrical systems, can repair large rents in clothing. The emory paper is for cleaning the points, in the event that the rag won't clean them.

Finally, you should take along something for your creature comfort. If you still smoke, the middle of an enduro is a poor time to give up. You won't smoke as much as you do when you're at home reading a book; but a couple of cigarettes during the day won't cost you much time, and you will want them. Caution: be very sure that you put matches and cigarette butts *out*, even if you have to stop to do so. Enduros are often run through dry woodlands, and one fire could kill the whole sport for you and everyone in your part of the country. Enduros depend on the sufferance of landowners, private and public, and that sufferance may not last forever, even without fires.

You should carry a dime's worth of chocolate in the morning, and another dime's worth in the afternoon, in a pocket where it won't melt or get wet. Dirt doesn't matter: by the time you remember the chocolate, you're so hungry that you wolf it, dirt and all. Chocolate is carried by hunters, skiers, everyone who is outdoors and away from civilization for long periods at a time, burning up energy. No sensible enduro rider should be without it.

You may also want to carry a small quantity of liquor in an unbreakable flask. You may find that, quaffed at the

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right moment, it relaxes and refreshes you. Or you may find that it confuses you, and you lose interest in the enduro. It's a matter of temperament.

Water need not be carried. Though you crave it, you shouldn't drink very much of it; and when you get to the checkpoint where you're really dying of thirst, there's a checker waiting with a small cupful for you.

In the stationwagon, or whatever you have waiting for you at the end of the run and at the lunch stop, you should carry anything that strikes your fancy, or that you think you may possibly need. Space is no problem; weight is no problem. The following is a minimum list for the lunch stop: gasoline or pre-mixed two-stroke fuel, chain oil, engine oil and appropriate funnel, air pump, tire gauge, your entire tool box, a stand (if you don't have one on the bike), and a selection of metric, Witworth, or SAE nuts and bolts.

Your pit crew should have food ready for you, but don't eat very much of it, and don't drink as much of anything as you'd like, even water. Cramps on the trail are an agony very easily achieved, and very difficult to get rid of.

At the finish line, eat and drink what you like. I usually take a pain pill (the good kind that you need a prescription for) at the end of an enduro, to take my mind off sore muscles. A little drinking can be good too, though your system is so worn down by then that liquor should be used cautiously. Probably a regular meal is best, with two or three desserts. Be sure to have that set of clean clothes waiting, and get a couple of wide-eyed spectators to load up your bike for you. You won't even want to look at the damned thing.

# 6

## Riding Technique

Last year, you rode half a dozen enduros on your Honda dream (the one with the panel bars, low pipes, and ribbed front tire). It held up pretty good, but it hung up pretty good too whenever there was water or a log to cross; and you became embarrassed about the number of times you had to ask other riders for a boost. In addition, you really liked the old Honda, and you were sad to see the dents in the mufflers and the mud packed up under those classic, square fenders. You decided to save it for the road and buy an enduro machine; and because the Honda seemed like 800 pounds when it settled into mud over the tires and mufflers, you decided you'd give up some power next time and get a real lightweight.

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Very cagily, you watched the newspaper ads last fall, until they dwindled to a desperate few. In particular, you watched the ad for a two-year-old Kawasaki 120, "Exc. cond., needs some work, \$175." When it had been in for a week, you called up, sounding casual, and found that the work needed was an unbending of the front fork. "That's a hundred bucks, right there," you told the owner.

"My dealer said forty-five," he said defensively.

"Yeah, they'll tell you anything, just to get your bike in the shop. How many miles it got on it?"

You got the bike for \$125. The guy that sold it to you had wanted something woodsie looking to ride around his neighborhood, evenings after work. He lent it to a neighbor who bent the forks against a parked car, and then sued him. The bike had been sitting in the garage for six months now and he offered to sell you his helmet too.

You straightened the forks yourself, and added a fork brace, rake plate, stiff springs, and an engine sprocket with one less tooth. The machine looked as if its entire 1500 miles had been spent on tarmac roads in housing developments; and now, at last, you were going to give it the workout it was made for.

It's the first enduro of the new season. Next to you on the starting line is a guy with one of those fiberglass Bul-tacos, and another guy with a BSA Victor. When the starter says okay—nothing dramatic, he doesn't drop a flag—the two of them take off like scramblers, the Victor doing such a wheelie that the rider has to back off and try again. But you let your clutch out easy and give it only half throttle through the gears, because you know you'll need that clutch and that full throttle later on.

The morning is nippy, but very clear and bright. The

## *Riding Technique*

trail starts off across a field, and you can follow it not only by the arrows but by the tracks of other machines written in the dew. Watching earlier starters, you have seen that there are some good-sized bumps in the field, and that several earlier guys have spilled on them. When you near the first one, you see the danger sign (an X the same size as an arrow, or an arrow pointing downward) and slow down. It's a ditch and there's no way around it. Within twenty feet of it you put the bike in second and turn on the gas enough to be accelerating smoothly. You're still sitting down, but you transfer your weight from the seat to the foot pegs, and when the front wheel rises you pull back—but not violently—on the handlebars. When the back wheel is airborne too, you turn off the gas and for a moment you float; but then the machine starts to drop away under you, so that by the time you land you are almost standing upright on the pegs.

The back wheel lands first because of the pull you've given the bars and because you took off under power; and you land softly on the seat, with your leg muscles taking up the shock. You *have not* applied the brakes or revved the engine while in the air, so both wheels are still spinning at about the right speed. The front wheel is still aimed straight ahead, so you don't wobble when you come down.

There's another danger sign, but it's just for a stump, and you are going slowly enough to avoid it. This is the one, you think, that you saw guys spilling on, because they jumped the ditch at 50 instead of 30. The third bump is a ditch like the first, but across it is a second-growth wood, with a footpath leading through it. You've seen earlier riders jump this ditch in the same style as the first, but the

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woods look dense, and you don't feel adventurous yet: it's too early in the morning.

You throttle down, put the bike in first, and come on the ditch from an angle, which makes the trough longer and the ups and downs more gradual. Your wheels stay on the ground all the way, and you motor up over the mound, down into the trough, and up over the mound on the other side. You've lost a few seconds, but not your composure; and sure enough, the Victor guy is over there in the brush, just picking himself and his machine up off the ground. He says he's all right, so you go on.

The trees are just budding up: the red stippling of the maples, the yellow sheen of willow. Skunk cabbages and fiddle-head ferns are making a start in the wet places. The trail winds erratically through all this, and you can't take shortcuts, because the saplings are on one foot centers. You're in first gear initially, but soon in second, as you discover how easy it is to throw the Kawasaki from one side to the other. There are too many rocks and roots for you to think of putting your feet down. You find yourself going faster and faster, once even thinking of shifting into third; and then, on a sharp right-hander, your knuckles graze the trunk of a larger tree, and you throttle back. You're losing time, but the whole run can't be this kind of trail, and they can't throw a check at you until five miles out. Maybe you can make it up later. At least no one's passing you yet, and you've passed several guys who were riding too fast and went straight into the skunk cabbages.

After a couple of miles, the trail comes out onto a two-rut Jeep road, and the arrows point to the right. (To the left is a sign saying "W", meaning wrong. Arrows, danger Xs, and Ws are the only signs used.) Though the road is ungraded, the turns aren't too sharp: you can run

## *Riding Technique*

in third and fourth gears. The surface of the ruts is mud, hard packed but somewhat slimy, especially in the low spots; but you find by experiment that the raised, grassy crown and shoulders help hold you in the groove.

You see with satisfaction that your speedometer is staying close to 40; and now, for the first time, you have a chance to look at your odometer and watch. 2.6 miles you've come. At 2.8, your watch, which you set to read 12:00 when you started, should read 12:07 ( $24 \text{ mph} = 2 \text{ miles per } 5 \text{ minutes}$ , or .4 mile per minute). You take another turn: the odometer says 2.8 now, and the watch 12:09. You're two minutes down.

A mile farther down the road, you round a turn and come upon a low spot where water has collected in two long puddles. You have only a split second to think, and you toy with trying to get up on the crown, but realize that it will probably throw you off balance at this speed, so you brake as much as you can, and turn the gas on again when your front wheel touches water. Because you're going straight and under power, you don't weave or bobble. Your weight is on your feet and somewhat forward, to make sure the front wheel stays down. The water deepens and you slow, but you can see that you've got enough momentum to get through, so you don't turn on the throttle any harder and risk losing traction with the rear wheel.

There are a number of such puddles, some of which you can skirt, when the shoulder is low. The ones you can't skirt you find yourself riding through with less trepidation and faster: you're actually getting to enjoy them, and the smart thwack of water against your boots. You are disconcerted when three guys, probably riding as a team, splash by you on bigger machines.

Their mufflers make nice clouds of steam when water hits

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them, but the spray in your face isn't so nice. You wipe off your goggles (the rag in your pocket is handy for that) and look at your watch and odometer again: 12:12, and 4.8 miles just coming up. It's time to slow down, not speed up. There can be a check any time now.

A couple of turns later, there's the check, right around a corner where it can't be seen; and there are the three guys, revving their engines and slipping their clutches, trying to stall a minute or two. You ride right in.

"I've got him," one of the checkers says to the others. "And get those other three guys too. They're weaving. 8:48, the whole bunch of them."

The checkers are running on real time, and you're running on an artificial time you've set up for yourself. You and the Victor guy and the Bultaco guy are #35, #35A, and #35B, and you're all due here 35 minutes after key time for this check, which is 8:13, because the check is 13 minutes ( $5.2 \text{ miles} \div .4$ ) from the start. On the trail you needn't worry about all that, or the times the checkers are calling. Bill Baird sets his watch by real time, so that he can "check the checkers"; but that makes it more difficult to check his own time. The checkers' watches are officially checked at the beginning and end of the day; and if they've gone Mickey Mouse in the meanwhile, the check counts as an observation check only (see chapter 1).

You tell them your initials, stuff your receipt in your pocket, and go. A few hundred yards beyond the check, the Jeep road comes out onto blacktop, and the arrows point you left. You're barely in top gear when the three big machines go by again; but that's good, because now you have a guide to watch the arrows: they're harder to see out in the open than in the woods, because you're going

faster, and because the layout crew puts up fewer of them. You crest a hill, and in the next dip you see the three machines braking and U-turning. They come back toward you, then duck off into the woods; and you are right on their tails, back on another Jeep road.

The big machines pull away, and you let them. You're watching your time (8.4 miles, 12:20, slow down a little) and enjoying your woodland ride. Last fall, the last time you rode the Honda in an enduro, you were coming through woods quite like this when a young doe jumped across the trail 50 feet in front of you. You wish you'd see another now, but even if you don't, you like the spring smell the ground is giving out and the greener color the grass has been turning in the last few days.

At 9.7, you cross blacktop and head straight into the woods again, this time on a footpath. A lot of cars are parked on the blacktop, and from up ahead comes the noise of revving engines. From the spectator sheet your wife took, you remember that there was a spectator point about ten miles out, and you wonder if she's gotten here on time. Aw, the hell with her, she's never anywhere on time. There's some damned river up ahead, probably with a checkpoint just on the other side of it, and that's enough for you to worry about.

It's not a river, but it is a good-sized creek with a steep bank leading down to it and an even steeper one on the other side. Spectators line the banks, and the three guys on big machines are down in there, along with half a dozen others who have wet out or can't get up the bank. The bottom looks solid and only about six inches deep, but it's greasy stones, which will make it difficult to get a run for the bank.

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Using the back brake (not the front, which could lock and cost you your steering) you ease down the near bank into the water, noticing out of the corner of your eye that one of the big machines has just charged the far bank, reared up, and dumped its rider. He has friends to help him, but the machine is lying on its side in the water, blocking the most likely exit. You look up and down the bank and see another spot, almost as good, where a few tracks show that other riders have made it up. You ride (slowly and without braking: a big stone could flip you) to within ten feet before you get off. Now you run and push beside the bike, with the engine revved and the clutch slipping in first gear. When the front wheel hits the bank, you give an extra heave and let the clutch out all the way. Though the front wheel gets up over the lip, the crankcase catches and hangs up. Simultaneously you feel yourself slipping on the muddy bank, but before you fall you are able to throw the machine away from you, so that it lands on its side on high ground.

When you pick yourself up, there's water in your boots and mud all up the side of your pants. The spectators are enjoying it a lot, God bless them. You scramble up the bank and because the Kawasaki, lying down, has flooded, you have to kick it over quite a while before it fires. It runs badly for a moment, but you hold the throttle wide open until it clears itself out and starts to rev.

You sit the machine. Down in the creek, the three guys are still trying to right the one bike, but it's getting more complicated because another of their bikes has just fallen off its stand. There are several more bikes in the water now: about a dozen in all, including #35A BSA Victor, who is heading over to try your route. If you had had a clear shot

at the obvious exit, you might well have taken it without getting off the machine: taken about a 15 mph start in first and powered smoothly up the bank, letting off on the throttle a little as you rose to keep the rear wheel from spinning and the front wheel from coming off the ground. But if you'd waited for a clear shot, you'd still be down there, along with those other guys.

You get back on the trail and take off. There's no check, but the trail is gradually descending. A mile down, around a bend and heading back toward the creek, the trail gets muddy, and then there's actual water in it, and up ahead is a real swamp in which you see a bunch of machines, making a lot of noise but moving very little. Some of them are in up to the axles.

The swamp is .3 mile long. At 24 mph, it should take you 45 seconds, but it does take eight minutes, and you're doing very well at that. The mud is black and sticky, and several times you have to stop to look for the best route. First you pass the #35B Bultaco (a branch is stuck in his spokes) by going straight through the middle of a section he has tried to skirt. The middle proves deeper than you'd figured, and you have to get off and run beside the machine, pushing it and slipping the clutch. You try never to come to a dead standstill except on relatively dry ground, because once you're stopped the mud tends to suck down the machine, making it harder than ever to get free. You hope your clutch won't burn.

You pass several other bikes: one wet out, another with a broken chain, another just plain stuck. The riders are helping each other, and as long as you're moving, as long as they don't ask you for help, you don't stop; otherwise you'd never make the second check. You pass

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them by detouring through the brush beside their mudhole. It's not so much run over, though it's still swampy, with stumps you have to avoid and logs you have to lift your bike across. But you're back on the course quicker than you could have been if you'd stayed on the main route.

Farther on, there's a traffic jam where the course goes between cedars so closely spaced that there's only one route possible, and somebody is stuck in the middle of it. You lean your bike against a tree (*not* turning off the engine, because it might not restart) and, along with three or four other riders who are also waiting, you horse the stuck machine through. The rest of you then follow each other, giving a push when needed, though you don't need it for your 185 pound bike.

The check is right beyond the swamp, of course, and beyond that is the same blacktop you crossed before the creek. You turn right and enjoy the feeling of shifting gears again; and even though the breeze feels good, you rezip your jacket. It's hard to remember that you ever felt chilly this morning. You take a quick inventory of the bike as you ride along: the shifter seems to be pushed up a little, but not enough to bother you. The brake pedal is still straight, but the rear brake must have gotten wet, because it's almost useless and will be so for several miles. The front brake is still working fine.

It's 12:42, which means you should have covered 16.8 miles, but your odometer is just coming up on 12 miles. Looked at another way (and this is the way enduro riders usually look at it) you should have covered these 12 miles in 30 minutes, which means that you're 12 minutes behind. Either way you look at it, you've got some motoring to do.

The blacktop becomes dirt in a mile or two, but you ride

## *Riding Technique*

both surfaces the same: a little more than half throttle, which gives you about 50 mph (you could run 60 or 70 if you had a bigger machine, but no machine should ever be run wide open, except in short stretches).

You lean into the turns like a roadracer to keep your bike as vertical as possible because the knobby tires don't bite well on hard surfaces, and they bite even less well when they're angled over. For sliding on hard dirt, flat-track style, you would need semi-knobby or trials universal tires.

The next check has no hazards in front of it, and by that time you've made up half of the twelve minutes you were behind. You feel rested now, and you're pleased when the course turns right onto a sandy trail. You can ride this faster than the muddy Jeep road in the first section because you've got plenty of traction here, and your only limitation is how hard your 120cc engine will pull. Your speed slows and increases according to the density of the sand: where it's wet or hard packed, you can skim along; where it's dry and fluffy, you're down into third gear and even into second.

This is where the handling of a woods machine really pays off: your Kawasaki can do amazing things on sand, and it does them almost without your help. You put it in as high a gear as it will pull, remembering not to over rev it here any more than you would on blacktop. You sit well back because you want the weight for traction, and you let the steering more or less take care of itself. You do, of course, steer some—mostly reverse steering, where you tweak the bars to the right in order to make the machine lean over to the left and turn left. You can slide gloriously on sand or loose dirt and control it with the throttle: more throttle makes the rear wheel slide out further and the

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machine turn further, and less throttle straightens the machine up. However, bearing down heavily on the bars and trying to steer the machine in sand will not work, except at very slow speed. You keep your feet on the pegs: a foot stuck out in a turn may well bury in the sand and may act as a rudder.

The crown of a sand trail is softer sand than the ruts, and may have stumps and holes that are difficult to see. Unless you have a lot of horsepower and very good suspension, it's better to stay in one rut or the other, even though the crown is farther from the branches that are always reaching out to smack you, and from the crown you're in a much better position to duck for one side or the other, should you come around a turn and find a puddle, a fallen branch, or a stalled machine. Jumping the crown, from one rut to the other, is better done at slow speed, so that it can be taken at a sharp angle.

You enjoy the sand trail, but beyond it is a sand pit: half a mile of very deep, fluffy sand skirting a blue lake. The quarrying operation is over, but the sand-firming vegetation has not yet grown back. In this deep sand, which would come up almost to your wheel rims if you stopped, you make slow going with your 120cc. Bigger machines go by you, including the #35B Bultaco. They can pull in second or third, and steer just as you did on the sand trail; but you can only pull first, and at 10 or 15 mph reverse steering doesn't work. At this speed, your front wheel tends to bury, and you have to grab the bars and fight them, and you're constantly losing your balance and having to put your foot down.

There are other swamps, other sand pits, other creeks, other nice trails. No two are alike, so that every moment requires your judgment as well as your coordination. Once

or twice again you look at your watch and odometer, but you're always late, so you keep pushing as best you can. At the gas stop you don't need anything, but you stop for a minute to talk to your wife and have a couple of drags on her cigarette. Everyone's coming through late, she tells you, and not in any kind of order. You're doing all right.

Lunch is a one-hour layover. Your wife has a cold, soggy barbeque for you, which is just as well, because you shouldn't be eating much. You have a few bites and a few sips of soda, and you lie down to smoke. "I did okay," you say. "68 miles, and only 17 minutes late, and I didn't even need the Hershey bar."

"Yeah, but they say the afternoon is tougher," says someone's bored child who has come over to annoy you.

"*They? Who's they?*"

"Just everybody around."

Nobody has ridden the afternoon course yet, except the layout crew, and it's a fair bet they're not talking. You roll over to get away from the kid and ask your wife how friends are doing. She's seen some and not others. Bob Stryker came into the gas stop on a flat tire, and when she left his father and brother were still changing it. Al Sedusky was about ten minutes behind you, and running on time. Ed Bolton never showed up at all.

Fifteen minutes before you're due out, you start the Kawasaki and run it up and down the road until the odometer comes up on even mileage (with a reset odometer, you wouldn't have to bother). You reset your watch to read 12:00 when you're due out of the lunch stop. You gas up the bike, oil and adjust the chain, and check the oil, the air in the tires, and the whole machine for loose parts. You don't try to bend the shifter back again now, because it's serviceable as is, and there's a chance you

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might break it. A minute or two before the 12:00 on your watch you pull leisurely away, even slower than you started off this morning.

You're in different country now: higher hills, clearer streams, fewer swamps. The course starts out mildly enough: an almost straight, two-lane country road through a wide valley. But after a few miles the arrows direct you down a muddy bank, through a ditch, and up onto a railroad embankment.

These railroad right-of-ways are forbidden by the AMA rulebook, but most enduros use them anyway. You get up on the cinders, as close to the ends of the ties as you can, and ride smoothly, not accelerating or braking suddenly, because you don't want the back wheel to break traction and sideslip down the bank. When you come to a trestle you stop, get off, and lift the machine one wheel at a time over the rail. You are now on the ties, and there's no good way to ride them: any speed will take the fillings out of your teeth, and any distance may break your fenders or even your frame. As soon as you're the other side of the trestle, you take a minute to lift your bike back onto the cinders again.

A mile later (you should be grateful—enduro sometimes run on railroad embankments for ten miles at a stretch) the course turns down into the ditch again, crosses, and goes straight up a rocky, greasy-looking hillside. You can see and hear several other riders trying to negotiate it.

The ditch, which has water in it and a muddy bottom, keeps you from getting a start on the hill. Nobody else is stuck in the ditch, so you assume that you can ride through it. You hit it in first gear with your engine pretty well wound up and the throttle full on. You're standing on the pegs.

## *Riding Technique*

When you get into it, you find yourself slowing down and the rear wheel starting to spin. You ease off on the power to keep traction, but still the wheel spins, so you drop down onto the seat two or three times in succession. The sudden added weight lets the knobby take a bite, and you pull through.

You start off diagonally up the hill in first gear, angling off more when you feel yourself losing power and never allowing yourself to break traction, which would make the rear wheel slip around until you were facing straight uphill. You're standing up and leaning forward as much as you can: your body should be plumb, not perpendicular to the hillside. You do well for a while, passing several stuck riders, but two thirds of the way up the hill gets steeper, and more rocks and vegetation force you into a single path. Here the ground is so slippery that your engine is of almost no help to you, and as you'd have to rev it and slip the clutch the rest of the way (probably burning the clutch) you shut it off. There's a guy near you with a Yamaha 125. "Okay, let's go," you say.

The two of you push his bike to the top of the hill. It isn't too bad, because the Yamaha has a lower first gear and more low-speed torque than the Kawasaki, and you're able to run it at just over idling speed in first without stalling. But the Kawasaki really has to be horsed up the hill (later models have high-low range, as well as a transmission, but that isn't helping you) and you're both exhausted when you get to the top. You sit down heavily on your machine, and he lies down on the grass. "Thanks," you say.

"Yeah, thanks, I guess," he says.

"What do you mean, you guess? You couldn't have gotten that Yami-hami up here by yourself."

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"Yeah, but if you hadn't come by with your goddam Kawasaki, I might of quit, and then I could of just rolled back down."

"Too late to quit. That first swamp in the morning was the place to quit. Come on: there'll be a check soon."

Both machines start, and you ride off together. The check is on the other side of the hill, and you're 11 minutes down. He, who is #31, is 15 minutes down. You seem to be much of a match, so you ride together for an hour or more, helping each other once or twice again. The time when you both need help most is when you've come about two miles down a nice woodland trail and suddenly it deadends in blacktop. There are no danger signs and no arrows.

In the morning, you would have had warning of this: with three riders for every minute, many of them less proficient than you, the trail would have been full of bikes going in both directions. But now there aren't too many left running, and those who are are keeping one eye on the route sheet. Guiltily, you pull your route sheet out of your pocket.

"What mileage you got?" you ask the Yamaha guy.

"Speedometer's busted."

"Great. Mine's got 26.8, and it's about right. I checked it on a corner about five miles ago. According to this, there's a right at 25.2, another right at 25.5, and a left at 26. We've been on this straight road a couple of miles."

You ride back to the last turn you took, which is 2.2 miles. With a reset odometer, you would now wind back 4.4, but as is you must keep it in your head. "24.6, this ought to be. The sheet says 24.5 left, but we went right."

You take the left anyway, riding past the W sign. .7 mile later, where the sheet says right, an arrow points

## *Riding Technique*

straight ahead, and the righthand trail says W. Now you're sure that some quite knowledgeable S.O.B. has been playing with the signs. At the next turn, 25.5 right, the arrows are okay, but you keep your route sheet out for another couple of miles, just to be sure. Next run, you ought to tape the sheet to the tank.

You lose the Yamaha guy, finally, on a rocky trail going up a hill. You're in front, riding in second gear with the throttle most of the way on (about 25 mph, and you'd be going faster if you could, but the machine won't pull third on this grade). It's fun: the bike is airborne as often as not, and you bounce from one rock to another, keeping your weight on the pegs and as far forward as possible to counteract the tendency of the grade to throw the weight to the rear. The rocks are slippery, but your knobbies seem to be getting a bite often enough to keep you moving. You're steering firmly because the rocks aren't like sand: they'll throw you off course rather than steer you right. At the top you stop to look back, but you don't see the Yamaha guy.

You're not going back for him, because riding down such a trail is considerably trickier than riding up it: you can use the rear brake only a little, and the front brake not at all, and there's so much weight on the front wheel that it wants to twist whenever it hits a rock. Being under power gives you stability, but you couldn't use power on that downhill. And you'd be running the wrong way on the course, against traffic, and that is discouraged—though not forbidden—by the rulebook because it's so dangerous.

You wait for him a minute or two, eat the afternoon chocolate bar, and ride on. If he's in trouble, someone else will be along to help him.

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You come into a section that has been logged over. Logs lie across the trail, and danger signs and arrows direct you around some of them. Other ones you jump: you stand up, with the throttle about half open in first gear. Just before the front wheel hits the log, you twist the throttle on full, making the front wheel very light. A yank on the handlebars can make it lighter yet. The front wheel bumps up over the log easily, and the undercarriage clears it too. The back wheel hits hard, dropping the front wheel to the ground, but it does bump up and over. Unlike a jump caused by a ditch or other gradual obstacle, there's no graceful, controlled way of landing on the far side of a log; but you *can* land and keep going and straighten yourself out. If the log lies diagonally across the trail, you have to maneuver around until you're coming at it perpendicularly; and if you can't do that, you get off and lift the bike over, because there's no way to jump a diagonal log.

In the middle of the logged-over section is a pile of logs and branches five feet high. The layout artists—undoubtedly thinking themselves humorous—have stapled an arrow to the topmost branch, pointing straight ahead. There's no way around. You pull the front wheel up, jump the first log, and crash across several others; but then you hit a bunch of them too solid to ride over. The bike stops and you are thrown forward. You land in a mass of branches and twigs, and the bike lands on top of you.

You are able to get out from under and right the bike before the engine dies. Now you have no choice but to horse the bike over the pile a few feet at a time, dragging first one end and then the other, and helping yourself with the engine when you can. You wonder how guys with big

machines will manage, and the answer is: even worse than you, and with a lot more work.

You're more tired in the last twenty miles of the run, and you play it safer than you did in the morning, because you know your reactions aren't as good. Several times, at mud holes you might have ridden through, you get off and walk through the middle, idling the bike around the edge in low gear to be sure that it doesn't get stuck. You couldn't be wetter or dirtier than you are now, and you just don't want to push it any more. You don't seriously try to keep time, though you do look at the odometer to see how many more miles you have to go (and you keep subtracting 4.4 from whatever it says, to allow for the time you took the wrong turn). You're grateful that the organizers take you out onto hard-packed dirt for the last ten miles to the finish line.

You're just over half an hour late at the last check, and by the time you've gotten your wet clothes off the Yamaha guy has come in. He finished within his hour too; but the Victor guy from this morning and the Bultaco guy, they never do show up.

A week later you get the results in the mail, and you find that as you suspected your 814 score was far too low to put you in the running for a trophy. The Yamaha guy, in fact, did considerably better than you in the morning, and wound up with an 818, though that didn't get him a trophy either. But there were lower scores than yours: you were tenth in a class of 56 starters. Only a third of the starters finished the run and got a score at all, and you are pleased to have been one of them.

# 7

## Layout

One spring evening several years ago Paul Brumfield, who lays out Sandy Lane, stopped to visit a certain expert rider. Next fall's event was on Brumfield's mind, because he likes to get most of the layout work done early; but naturally he didn't plan to say anything too specific about it on this visit. He was shocked when the rider told him, "Everyone knows the first few checks at Sandy Lane are just time-keeper's checks." (He meant that the terrain was so easy that the only way a good rider could lose points was by arriving early at the checks.)

"All right," thought Brumfield. "You think you've got me figured, eh?" That fall he ran the course through a wicked

## *Layout*

swamp within five miles of the start and took 16 points from that rider—and six points from the winner—at the first check.

On its most sophisticated level, enduro layout is a battle of wits between the layout crew and the expert riders. The riders think of the crew as one man (often it is dominated by one man), and they say to themselves, "If I know Oscar Lentz (of Jack Pine), he's going to have a check just the other side of that hill." Or they say, "Brumfield wouldn't have another swamp so soon after that last one. I know Brumfield." The better the layout crew, the more often it will fool the expert riders.

But the crew has to consider the beginner, as well as the expert. If it makes the course tough enough to challenge the expert steadily all day long, it will kill the beginner at the first or second check: he'll go home—he may have come 400 miles to ride—frustrated and angry. Next year, when he's a better rider, he may not come back to that event.

The Delaware Enduro Riders put on a nice event each fall. Their clubhouse, which serves as their starting line, is near the Chesapeake and Delaware Canal, and they use the canal banks for much of the morning half of the run. The course follows the tops of levees, drops down into ditches, strikes out across sand flats. There are a few shallow water crossings and some spectacular hillclimbs, and the course is not so easy that a full-dress Harley 74 could get over it. But even the beginners, when they don't have mechanical troubles, can make the lunch stop with plenty of time to eat and relax; and the experts may lose only five or six points all morning.

The afternoon is murder. There are swamps, brush piles,

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more swamps, and trails so narrow and tortuous that you can't possibly make 24 mph on them. Most of the beginners drop out, and some of the experts too; and even those who don't, lose 10 or 15 points at a crack. At the end of the day, only a third or a quarter of the starters are still within their hour; but everybody has had enough riding to go home feeling satisfied.

Ideally, an enduro should be laid over mixed terrain. There should be a real horror of a hazard, followed by several miles of easy riding, followed by some difficult brush or sand riding, followed by another hazard, and so on. Checkpoints should be spaced (see chapter 1 for rulebook spacing requirements) so that some come right after hazards, and some on difficult trails, and some on easy trails. They should always be a surprise to the rider, and so should the terrain. But the layout crew has limitations that keep it from planning such a perfect course.

First is permission for the use of land. According to the rulebook, permission in writing must be had for every piece of land that an enduro runs over; but in practice that isn't possible, because an intelligent landowner knows that if he gives permission in writing, he's responsible for injuries suffered on his property. If he's a nice guy he probably says, "No, you don't have my permission, but I don't plan to be here that day." If he's a bad guy—"What, a motorcycle race on my property?"—he just says no, and the crew has to find a way around his property. Permission in writing can and should be gotten for the use of all public lands, because there the owner is not responsible; and if an official isn't asked he may send some of his peace officers around to see what's going on. Because public landholdings tend to be larger than private, so that 100 miles can often be laid out

on the strength of one letter of permission, a large part of most enduros is run over public land.

When permission can be gotten to run over private land, it must not be abused, because a club that sponsors one or two enduros a year needs to build a list of friendly land-owners who can be asked again, next year or the year after. Hurrying, knobby-tired motorcycles can be destructive, and the layout crew must plan the course to minimize the destruction. For instance, if the course is laid out to skirt two sides of a field, rider 10A is likely to see rider 8B disappearing into the woods at the far corner. Instead of following the arrows, he cuts diagonally across the field, no matter what's planted in it. Riders 11A and 11B follow him, and by the time rider 13A comes along there's a diagonal track that catches his eye. 317 subsequent motorcycles plow down half the young corn in that field, and there's no use telling the riders they must follow the arrows. The smart layout crew doesn't skirt two sides of a field unless it knows the field will be fallow on the day of the enduro.

Another limitation on layout is that good terrain isn't always available. Sometimes, to get from one interesting section to another, it's necessary to run for many miles over dull roads; and then, to have a decent number of hazards for a day's run, it's necessary to bunch them too close. Now that America is building limited-access highways as if it meant to pave the whole continent, there are few enduros that don't have to cross one of them on a bridge or in a culvert. Getting to the crossing point may force the use of some terrain that wouldn't be considered otherwise.

Sometimes weather plays a large part. Little Burr National (Ohio) was meant to be a rough run one year, with plenty of water. When it rained steadily for a week before

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the event, the water was obviously impossible, and the 250-miler had to be rerouted the day before so that it covered the first (and driest) 81 miles three times over. Even so, Penton was the only rider to finish.

A layout crew can't tell, when it starts working on a run, what the weather will be a month or six months later. Streams become rivers in flood, but swamps can become highways in drought, too. The best precaution is to include a few crossings of streams that don't dry up in any season, and to lay out alternate routes around swamps. However, alternate routes have to come out to the same mileage as principal routes, or else two sets of route sheets have to be printed. If the weather deteriorates suddenly and unexpectedly, the organizers can always cut the required speed from 24 to 18 mph (.3 mile a minute) or even less, though that may necessitate moving some of the checkpoints to have them fall on even multiples of .3 mile.

If a side-car class is to be part of the event, the entire course must be laid out with a side-car outfit. Otherwise, a solo machine may be used for layout, and every hazard on the route should be negotiated by the layout crew—preferably several times—to be sure it's passable. If it isn't, it should be avoided or improved.

Brush cutting, bridge building, and swamp corduroying are a regular part of layout work. For a bridge, two logs about three feet apart may be laid across a ravine, with  $2 \times 4$ s nailed between them. Any improvement to the course should be sturdy enough to remain in place until the last rider has used it, because a bridge that collapses when half the field has crossed it or corduroying that breaks up and floats away gives an unfair advantage to the low-numbered riders. Certain natural improvements that break up

with use, such as beaver dams and grass on top of swamps, should be avoided altogether.

An ideal run is laid out so cleverly that the general public is never aware that it is taking place. Towns and built-up areas should be skirted, and main roads too; and the fewer houses the course passes, the better. One famous pre-war enduro started at midnight. A slow rider, coming along a dirt road in the dawn, saw a group of men standing in front of a house, and he assumed it was a checkpoint. He stopped, and found himself looking into the barrel of a shotgun. "You been riding around this house all night," said the man on the other end of the gun, "and I just want you to know, next time you come by I'll blow your head off."

Even if riders don't get shot, they're likely to get into a good deal of trouble in built-up areas. Their machines are noisy at the start, and many lose mufflers and break exhaust pipes in swamps and spills. Suburbanites are super-protective of their neighborhoods, and by the time they hear thirty motorcycles go past on their very own Honeydipper Road, they decide there's a race going round and round their block, and they call the local cop. If everything's legal the cop can't do much except hold each rider up for ten minutes while he checks his license and registration; but some of the riders always are *illegal* (Is your brake light still working? Where's your mirror?) and that's when the cop remembers that it's the householder who's paying his salary, not the rider from three states away.

Another reason for avoiding main roads and built-up areas is that motorcycles that have been running through the woods often have flat tires, broken brake and clutch cables, or throttles that are stuck half open. Usually they have little or no brakes. Many are geared down too much

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to run at highway speeds. They are unsafe in traffic.

To lay out a good run, the most necessary ingredient is variety. The enduro described in the preceding chapter contains a variety not usually found in a one-day event, because the course, winding back and forth through the woods, seldom gets more than 25 miles away from the starting line. It's sand country, or it's rock country, or it's mud country, and that's that. Still, there are different kinds of mud, different screenings of rock, etc. And the placement of water crossings is almost entirely within the crew's control, because the course can be made to cross a stream at any point, and it can cross more than one time. The layout crew should keep the B rider running and the A rider hopping.

Making the expert hop is partly a matter of fooling him with checkpoint placement. Brumfield's vilest trick in the 1968 Sandy Lane came soon after the lunch stop, when the riders were still digesting their food and remembering their cigarettes. The course came down a hill, and at the foot of it was a swamp, with a checkpoint visible on the far side. However, the course didn't go through the swamp at all: it turned right, followed a brushy trail for half a mile, and came back on the check from a different direction. Arrows were posted, and the route sheet indicated the turns, but many a rider thrashed across the swamp only to be told to go back and approach the check from the right direction.

More often, points are taken by placing a check right after a hazard that delays all riders, even the best ones. The layout crew will describe the run by saying, "We figure to take 10 points off the winner," or, "We want 25 points." The points are taken a few at a time, and decent trails between times give a chance to make up those minutes; otherwise, the event is a cross-country race.

## *Layout*

Checks *must* fall on exact minutes, which means, at 24 mph, that they can fall only on multiples of .4 mile. A sand pit or a good-sized stream crossing may delay an A rider one minute; but if it comes at 24.8 miles, the check must be either in mid-stream or else at 25.2, by which time the good rider will have made up that minute. The crossing will still take points from the B riders, who will be five minutes getting through it; but they are half an hour late already, and taking more points from them is not the object. If the crossing is fun to ride through, it should certainly be left in; but to make it effective as a points taker, the earlier part of the course must be rearranged so that it comes up .1 mile earlier or .3 mile later, and has a check just past the far bank.

The best riders keep their time in seconds, because they know that if there should be a check where they're due at 12:33, they get a perfect score by arriving any time between 12:33:00 and 12:33:59. They try to run in the first 20 seconds of their minute, which gives them almost a whole minute to waste on a sand pit, if need be. Sometimes, if they're being trailed by a less good rider who hopes to make their timekeeping work for him, they'll run on the last 20 seconds of their minute, counting on getting through the sand pit quicker than their follower does. Generally, the hazard has to be difficult enough to cause a delay of a full minute—not half a minute—to get a point off Scirpo or Penton or Baird.

Half a mile of swamp, which may cost the best rider five minutes, doesn't have to be jiggled to work out to a certain mileage, because in .4 mile he can't make up five minutes, or even two.

Timekeeper's checks are important too, even if they don't

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take points. On a run where the A riders figure out that the only checks are right after hazards, they will ride five minutes ahead of time all the time, so that they have time enough to get through any hazard.

A good layout crew should also take esthetics into consideration. I once rode an enduro in North Jersey that started from a trash dump and wound through other trash dumps most of the day. It was challenging riding, but I still wouldn't go back there for another event. At an enduro, the riders talk about machinery and riding experiences, but many of them are more hip than you'd think to nature and beauty, and they dig it. They can name birds, and they like to see animals. Even at the speed they're going, they don't entirely miss autumn leaves, waterfalls, unfolding ferns, flowers, clouds. If a layout crew is proud of the countryside round about, it should give the riders some chance to see it. They'll remember the run with pleasure, and come back next year. Back Mountain Enduro Riders advertise their annual event by saying, "100 miles of the most scenic and picturesque riding in the East." It's true, and it draws riders.

Arrows must be posted by the layout crew, and a good many more should be posted than the two per turn and one per two miles of straight course that the rulebook calls a minimum. The AMA gives its official approval to signs made by an Ohio printing company, and their signs are supremely legible. However, most clubs make their own. Signs should be at least four inches square, made of cardboard that doesn't dissolve in the first rain. If the course goes near last year's course, and not all last year's arrows have been taken down, this year's should be a different color.

## Layout

The approved signs say R, L, and straight, in addition to showing an arrow, and consequently they cannot be taken down by a deer hunter and put up to point in a different direction. But that means that the layout crew must carry five kinds of signs (including W and X) instead of three.

On some public lands, the wardens require that signs be posted on stakes, not on trees. Where trees, fenceposts, and telephone poles may be used, a staple gun is quicker and handier than a hammer.

In brushy sections it may be necessary to place arrows every 20 feet or so. After 50 bikes have gone by, the riders will navigate more by tracks in the ground than by arrows; but unless there are a great many arrows, the first riders won't get through at all. Sometimes, when brush is very dense, shreds of white rag are festooned on branches, in addition to arrows; but unless there are a great many guides, the first riders won't get through at all. When possible, arrows should be at eye level (4½ feet) or slightly higher.

On open trails, arrows should be on the right, because that's where we are accustomed to look for directions. Turn arrows and danger X's should be on both sides of the trail. Danger signs should be posted *well* ahead of all sudden obstacles, and before all grade, road, and trail crossings that may be used by other vehicles. On the day of the run, the riders may not have much brakes, and may need quite a distance to slow down.

No matter how frequent the arrows, they're never frequent enough for the confused, beginner rider. Even on blacktop, they should come up every half mile. Enduros are not map-reading contests, and the intention of the rules is

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to give every rider "an equal chance to cover the official course without delay." Some layout men grumble that they don't want to "lead the rider by the hand"; but that—in my opinion—is exactly the intention of the rules. Enduros are riding contests.

Route sheets *must* be provided every rider by the layout crew. The easiest kind—and the worst—is a mimeographed sheet of typewriter paper. The best is a piece of water-resistant cardboard with water-resistant printing on it. If it is long and narrow, it can have only one column, which makes easier reading. The morning section can be printed on one side and the afternoon on the other. All turns and their mileages *must* be listed, and it's generous to give some other hints too, such as "37.2, L on gravel; 38.6, R & L over RR." These hints can help when a rider is lost, or when signs have been taken down.

The last job of the layout crew is to inspect the course the morning of the event. Some crews like to start only half an hour ahead of the first rider, because they can then see that the checkers (who must arrive at their checkpoints half an hour ahead of their key time) as well as the signs are where they should be. However, if many signs are down, it's difficult to put new ones back up again and still stay ahead of the first rider (supposing he's running on time). Because a misplaced check or a bunch of destroyed signs can cause long delay, and because a layout motorcycle may die on the trails like any other motorcycle, it's best to have two or even three members of the layout crew riding ahead of the contestants. That way, one can stop to fix whatever needs fixing while the others ride on ahead.

On the morning of the run, the layout crew is wise if it does not try to blast through the worst hazards. It's better

## *Layout*

to skirt them by an unmarked trail; but it's essential to ride up to them first, and to double back on the other side of them, to be sure that all the arrows are still in place. Where a swamp is deep enough to bog a motorcycle, deer hunters seldom wade in to pull arrows down.

Many very good riders prefer layout work to competition. A layout crew spends hundreds of hours putting together a good run, and a contestant seldom spends more than six hours riding it. Trying a virgin creek crossing to see whether it's passable is more fun than waiting to get up the far bank while the boobs ahead of you flounder around in the mud. In layout work you find yourself in constant, imaginary conversations with the A riders. "This sand pit is for Baird," you find yourself thinking; or, "I wonder if Bill Decker will guess where we're going from here." But before trying layout, a rider should have several seasons of competition experience.

## Organizing an Enduro

No individual can get an enduro sanction from the American Motorcycle Association. The sponsor must be an AMA-affiliated club, and application for the sanction (fee: \$10) must be made at least 20 days beforehand, though an enduro requires so much organizing that it would be foolish not to apply many months beforehand. Recently the country has been organized into districts for all sportsman (non-professional) events, and the districts—not the national headquarters in Columbus, Ohio—issue sanctions for local events. National Championships (fee \$50) get their sanctions from Columbus, and application must be made before the Competition Congress meets, around Thanksgiving time each year.

## *Organizing an Enduro*

Columbus schedules the Nationals so that no two are on the same date, and districts (there are about 40 of them) seldom allow two enduros on one date, or a local that falls on the same date as a near-by National. Clubs that regularly sponsor enduros are affiliated with their districts, and send representatives to sanction meetings each winter to bargain for next year's sanction dates. The dates for all kinds of sportsman events—scrambles, hillclimbs, enduros, poker runs, observed trials, etc.—are then printed on schedules, and dealers distribute them. Applying early enough to get on a schedule is an easy way for a sponsoring club to assure a good turn-out of riders.

On the other hand, you may decide not to bother with an AMA sanction, in which case you don't have to bother with the AMA rules either. This has been done very successfully for several years by the Berkshire Trials. The event is run like a European trials: an enduro with no points lost for getting to the check early. As a good many riders usually end with perfect scores, the winner is decided by bonus points which he earns in braking and acceleration tests, hillclimbs, gymkanas, etc.

The advantages of the European system are that it is easier to score, that it does not require a speedometer or a watch, and that it is more like an all-out race, even for the experts. The disadvantages are that it increases competition and lessens cooperation; and that, with the bonus point system, the actual event has no winner, but serves only as a qualifying round for the bonus point contest. And the AMA is vindictive: it has been known to suspend members who compete in non-AMA events. Because the riders fear suspension, and because they know when they come to an AMA enduro exactly what the rules will be, it would be

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hard to sponsor a non-AMA enduro on a scale any smaller than the Berkshire Trials.

To hold a successful enduro, your club should have at least 10 members with real enduro experience. For an event of only 50 miles, you need at least 17 people: a referee, 12 checkers (three at each of four checkpoints), two layout crew, and two entry blank processors. You may also want to have guards at the first few blacktop crossings on the course. Not all workers need be experienced, but each check should have at least one person who has run a check before, and the entry blank processors—who will later be used as scorers—should know what they're doing, and so should the layout crew. The referee should be the most knowledgeable of all.

In many enduros the referee never does a thing. He can appoint a starter and a clerk of the course, if he wants to, and they'll do his routine jobs for him; but he must receive and decide all protests (about the inaccuracy of a checker's watch, for instance). He may disqualify any rider (for not having a muffler, for instance), even though no protest has been made. His decisions may be appealed to the AMA, but they seldom are. He is a powerful man, and he needs to have judgment, a thorough knowledge of the rulebook, and plenty of enduro experience.

A clean-up crew, which rides the course after the last contestant has gone through, can sometimes help riders who have gotten badly stuck or been hurt. The layout crew, which has already ridden the course once today, is presumably too bushed to do it again; but sometimes the checkers from the earliest check can ride clean-up after the check closes. They seldom find all the lost riders.

Several years ago, a Connecticut dealer invited a kid who

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had just bought an enduro machine from him to come ride Sandy Lane. Arriving at the kid's house to pick him up, he overheard the father say, "Son, don't think you have to finish this run. It's your first one, so just do the best you can and quit when you're tired."

The dealer had heard that quitting talk before, so all the way down to New Jersey he impressed it on the kid that he *had* to finish: three, four, five hours late, it didn't matter: his manhood demanded that he ride the whole course.

They were assigned different numbers and did not see each other after the start. The dealer got in about 3:00, and when the kid didn't show up by 5:00 he chuckled to himself, thinking that the kid really had taken him seriously. By 7:00, when it began to be dark, he wasn't chuckling any more: the scorers reported that the kid had made the first two or three afternoon checks, but since then no one had heard from him. The dealer wound up sleeping on the floor in the roadhouse that served as start-finish line.

About 3:00 AM the state police telephoned. They said they had gotten a call from Tabernacle, where someone in the public phone booth was claiming that he had something to do with yesterday's Sandy Lane. Should they go out and pick him up?

They almost missed the kid because he was curled up on the floor of the phone booth with the door closed, trying to get warm. Apparently, he had had troubles in the afternoon, both with his machine and with his own inexperience. He was soon over his hour, but he kept riding, even though he got further and further behind. Soon there were no other riders on the trails, and no checkpoints either. Still, he had the arrows to guide him, and he tanked up at the afternoon gas stop.

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At dusk, he was within two miles of the start-finish, but he misread an arrow, took a wrong turn, rode a mile down a trail, and picked up the arrows of the *morning* course. Had there been a clean-up crew, he would have been *behind* it. He rode until he ran out of gas, a mile or two from Carranza Memorial, in the heart of the Pine Barrens. Then, in the dark and not knowing where he was going, he walked out ten miles to Tabernacle. Meteor M. C. gave him a special sportsmanship award, but he hasn't been back to a Sandy Lane since.

Midnight phone calls from despairing relatives are the frequent aftermath of an enduro, and the promoting club should try to keep tabs on *all* the riders, not just the winners. "In the interest of safety," says the rulebook, "any contestant unable to complete the course should so notify the officials." Checkers should also record the passage of *every* contestant, even if he's three hours late. To save paperwork, they usually don't bother with it.

If your event starts two machines on a minute, you will need three checkers per check. If you start more, you will need more checkers, especially at the early checks where most of the machines are still running and they tend to arrive in bunches. On a long run, early checkers can be used again in the afternoon; but most checkers can be used only once, because each check must be open half an hour ahead of the first rider and it must stay open an hour after the last one is due. If there are 300 riders (not unusual nowadays, even in local events) and they leave two-on-a-minute, the check must stay open four hours. If it's a 100-mile run with an hour lunch stop, each rider is expected to complete the event in five hours.

At each checkpoint, one checker is the timekeeper, and

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he calls out the time as each rider arrives. Because the machines are noisy, it is helpful if he also has a sign with flip-over, *waterproof* cards. Another checker holds a clipboard full of ruled paper, and on it he writes the time, the number, and the initials of each rider. The third checker has a pad full of small slips of paper, and on each he writes the time, the rider's number, and the number of the check. This is given to the rider and is his receipt, and in case of a discrepancy between the clipboard sheet and the receipt, the receipt is what counts.

If they are kindly, checkers may also ladle out a little water to the riders. Only a couple of swallows should be given, and it shouldn't be done at every check.

To keep time accurately, the sponsoring club should have a clock at the starting line which can be set to the exact second. Timekeepers (and riders too) set their watches by this, and the clock itself is best set by Canadian short-wave station CHU, which broadcasts nothing but the time all day (a worthwhile public service, but dull for the announcer). When timekeepers close their checks, they *must* sign every check sheet, and they should have their watches rechecked against the clock and certified by the referee. They are allowed 20 seconds inaccuracy.

Local civil defense units can provide a great deal of help to enduro organizers. They own elaborate radio systems, and since the air raid and bomb shelter fad is now over, they have little use for this hardware. Often they are glad to send a two-man crew out to each check, along with the checkers. They can verify watches, and when a checking sheet is full they can radio the results back to the scorers at the start-finish line, which speeds processing. They expect nothing more than praise for this service.

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The scoring is best done in an enclosed place where riders who have finished the run can't come pestering the scorers. Large sheets of paper are laid out, with the riders' numbers down the lefthand side and the check numbers across the top. Gridded off, this allows a box for the score of each rider at each check. These sheets, which are the unofficial results, *must* be posted half an hour before official results, so that riders can check their receipts against them and make sure the arithmetic has been correctly done. If a 100-mile run has nine checks and 300 riders, there are something like 6000 arithmetical operations to be performed by the scorers, and even with the help of an adding machine it's unlikely that all of them will be correct.

A much simpler method of scoring is to give each rider a card when he signs up. At each check, he presents the card to the checker, who figures out on the spot the number of minutes he is ahead or behind, writes on the card the number of points lost at that check, and gives the card back. When the rider finishes, he turns in the card, the points are added up, and his score is posted. Though I have seen this system used successfully, and though the rule-book does not specifically forbid it, it probably isn't legal, and certainly it wouldn't be allowed for a National. The more complicated and more foolproof system is the one the rulebook describes.

The sponsoring club must find a start-finish venue where the contestants will not annoy the general public and vice-versa. If the club owns a sizeable piece of property, that's ideal; but it must be sizeable, because 300 contestants will come in at least 200 cars and trucks and a good number of trailers. Several acres will be needed for parking.

Volunteer fire companies will often rent their premises for

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the day for \$100 or less. Their ladies auxiliaries are glad to sell hot food to the tired riders, and invariably they have kitchens, bathrooms, and other inviting facilities. However, the sponsoring club may want to sell the food itself: little money can be made sponsoring enduros because—unlike scrambles—you can't charge the spectator admission. The rulebook says that unless the event is a National, \$2 is the maximum entry fee, and most clubs don't dare charge more than \$4. If 300 riders show up, that's \$1200. Hundreds of dollars worth of trophies must be bought, and checkers' and scorers' supplies, and thousands of postage stamps. If the venue is rented, the sale of food may bring in the only profit the club makes.

The easiest way to get a mailing list is to take it from the results sheet of another club's enduro. Announcements (and entry blanks, if advance entries are desired) should also be sent to all clubs in the district, but sending to dealers is usually a waste of time. If the run is to be a big one, attracting riders from outside the district, the announcement should list hotels, motels, and campsites in the area, and the venue should be manned the afternoon before the event so that riders can check in, learn their starting numbers, and get organized for the next day. Back Mountain holds a square dance the night before their run, and it's a gas.

Printed or mimeographed spectator sheets should be available, though they should *not* be given out until the morning of the run, because there's no possible advantage in revealing part of the course sooner than it need be known. The sheets needn't list more than one spectator point an hour, and none near the gas and lunch stops, because the spectators are almost always relatives or friends of the riders, and need to be at those places when their

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heroes come in. For a small run, it may be enough to post directions to spectator points and let each spectator copy them down himself.

There are innumerable details to organizing an enduro: it is more complex than organizing a scramble, or even a professional event. But it is more interesting, too. The drama takes a whole day to unfold, and the organizers often absorb more of it than the riders do. Without a good backlog of enduro experience in the club, trying to organize one is a mistake; but other sponsoring clubs are always looking for help, and that's a good way to get the experience.

The clubs are knit together by the American Motorcycle Association. The AMA has been everyone's favorite whipping boy for at least 20 years, because it has made some bad rules and it has hung onto some other rules past their usefulness, especially in professional racing. The intention of the rules has always been to make motorcycle competition a rider's—rather than a spectator's or a manufacturer's—sport; and that intention has been best realized in sportsman events. Riders do of course graduate from sportsman to professional competition, but that is not the purpose. The rulebook lists 26 different kinds of sportsman events, including motorcycle polo, field meets, road races, hillclimbs, record attempts, and moto cross. The purpose is to promote motorcycling by giving each of us a day of doing whatever he likes at a price he can afford; and the purpose succeeds very well.

## Conclusion

Some say that enduros are threatened by the growing professionalism of the sport. A good A rider can get his motorcycle free from the distributor, and some of them get expense money as well. Not all distributors are equally generous. Triumph, for instance, is notoriously stingy, while Kawasaki and Husqvarna are generous to a fault. Could factory support kill enduros for sportsmen in this country, just as it has killed road racing for sportsmen in Europe?

Probably not, because machinery just doesn't matter as much in enduros. Agostini could not have won the 350cc roadracing championship on your Honda dream, but I believe Bill Baird could have won the Grand National Enduro Championship on it, or on anything else he put his

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leg over. Max Bubeck won the 1962 Greenhorn National on a 1949 Indian Warrior, which was a rotten bike the day it was new. Penton won numerous Nationals on a street-stock 175cc NSU, and later on a 250cc BMW. He rode them for no better reason than that he was a dealer, and those were his brands. Riding ability and judgment—not hardware—bring enduro success.

The increasing number of Nationals is a greater threat. Soon it may be that a contender for Grand National Enduro Champion will need a private plane to get himself and his bike from one event to another; otherwise he won't get points in enough events. The championship could then become a rich man's competition, or a factory-subsidized man's competition; but nothing the factories can do will assure success for their favored riders in individual Nationals.

The greatest threat to enduros comes from another direction: there are less and less woods each year, and they are used by more and more people—campers, canoeists, hunters, as well as motorcyclists. Americans are rich today, so we spend our excess money on toys and go out to the woods to play with them. Motorcyclists are not the most dangerous or destructive users of the woods, by any means, but we are certainly the most conspicuous.

We make ourselves conspicuous by taking off the muffler as soon as we are around the first bend in the woodland trail. That our virility is directly related to the amount of noise our motorcycle makes is a fantasy that dies hard in all of us. The AMA rulebook does state that all enduro machines "must be equipped with an approved muffler," but most clubs disregard it. At the 1969 Pine Hill Enduro, the referee said that only two riders dared approach his starting line without mufflers, and that both of them pro-

## Conclusion

duced mufflers quickly when threatened with disqualification. This rule is so simple to enforce, and by not enforcing it we are certainly shortening our days in the woods.

We make ourselves conspicuous by riding over land without permission. At a North Jersey enduro, the organizers thought to run over a few hundred feet of a boarding school's property, and within sight of the main buildings, without permission. Thirty or forty machines came through before the headmaster got the local cops to the scene, but the burden of their wrath fell on the next contestants to arrive, not the organizers. Who could blame them? The enduro had to be canceled, and for hours the whole neighborhood was full of cops, handing out tickets to motorcyclists who had never heard of the enduro.

We make ourselves conspicuous by over-using the woods, and especially certain parts of it. Sandy Lane, for example, enjoys such fame that every weekend in the summer people come from all over to ride the Sandy Lane trails. Volkswagen buses disgorge mini-bikes, half a dozen at a crack, and their nine-year-old riders go roaring off in all directions. And there are many more serious people: owners of good machines who don't quite have the nerve to enter a real enduro. A friend once mentioned to me "the time I broke my rib at Sandy Lane."

"I didn't know you ever rode Sandy Lane."

"You know, I broke it at the place where Sandy Lane happens. *At Sandy Lane.*"

Having so many practice riders means that the woods are constantly full of motorcycles. It means that no bird-watcher or botanist can go for a Sunday hike without having a motorcycle roar by. These quiet students of nature deserve our special respect: they dig what we dig, but they

## ENDURO

dig it even more, and in its purest form. We can help them by encouraging the state governments to ban all motor vehicles from certain public lands, by discouraging individual "enduro practice," and by publicizing our sport and promoting more enduros (perhaps the smaller the better) so that timid and unorganized riders will join us.

Nonetheless, motorcycling—like almost every other human activity, including sex—is a form of pollution. Motorcycles make noise, they make fumes, they run over the vegetation and dig up the forest floor. Are we, as Mary McCarthy says of tourists, "looking for unspoiled corners of the earth to despoil?"

In our defense, one car on the main highway two miles away makes as much fumes as several motorcycles, and one Jeep digs up the forest as much as 20 of us, because a Jeep sinks in where a motorcycle skims over. The noise problem is within our control, if we will control it. Campers frequently cause fires, and motorcycles seldom do. Hunters kill animals, or wound them, often without any desire to eat them. Even the naturalist will seek out and kill a rare butterfly or plant so that he may have it as a trophy. Saying that we should all stay home and grow vegetables organically in the cracks in the sidewalk is like saying that sardines should be square so that more of them will fit in the can. We are now talking about the population explosion, about birth control, about subjects beyond the scope of this book.

## Appendix

### GRAND NATIONAL ENDURO CHAMPIONS

Until 1957, there was only one National Championship, the 500-miler, usually held in Lansing, Michigan. From 1962 onward, points were awarded to the first ten A riders in each National, regardless of engine displacement, as follows:

1st	30 points	6th	8 points
2nd	20 points	7th	6 points
3rd	15 points	8th	4 points
4th	12 points	9th	3 points
5th	10 points	10th	1 point

Two-day Nationals (300 miles and over) earned twice the points.

### CHAMPIONS

1934	Jack Pine, Lansing, Mich.	Ray Tursky	Harley
1935	Jack Pine, Lansing, Mich.	Oscar Lenz	Harley
1936	Jack Pine, Lansing, Mich.	Oscar Lenz	Harley
1937	Jack Pine, Lansing, Mich.	Wm. Muelenbeck	Harley
1938	Jack Pine, Lansing, Mich.	Ted Konecny	Harley

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1939	Jack Pine, Lansing, Mich.	Wm. Muelenbeck	Harley
1940	Little Burr, Columbus, Ohio	Earl Robinson	Harley
1946	Jack Pine, Lansing, Mich.	Claude Goulding	BSA
1947	Sandy Lane, Camden, N. J.	Julius Droeger	Triumph
1948	Jack Pine, Lansing, Mich.	Earl Flanders	AJS
1949	Jack Pine, Lansing, Mich.	Bert Cummings	Harley
1950	Greenhorn, Pasadena, Calif.	Del Kuhn	AJS
1951	Jack Pine, Lansing, Mich.	Joe Gee	Triumph
1952	Jack Pine, Lansing, Mich.	Frank Piasecki	BSA
1953	Jack Pine, Lansing, Mich.	Don Pink	Harley
1954	Jack Pine, Lansing, Mich.	Bill Penton	BSA
1955	Jack Pine, Lansing, Mich.	Sal Scirpo	Triumph
1956	Jack Pine, Lansing, Mich.	Leroy Winters	Harley
1957	Greenhorn, Pasadena, Calif.	Eddie Day	Triumph
1958	500 m., Jack Pine, Lansing, Mich.	John Penton	NSU
	250 m., Little Burr, Columbus, Ohio	John Penton	NSU
1959	500 m., Jack Pine, Lansing, Mich.	Sal Scirpo	Triumph
	250 m., Little Burr, Columbus, Ohio	John Penton	NSU
1960	500 m., Jack Pine, Lansing, Mich.	John Penton	NSU
	250 m., Little Burr, Columbus, Ohio	John Toth	Triumph
	200 m., Sandy Lane, Camden, N. J.	John Penton	NSU
	150 m., Bellflower, Calif.	John Quick	Matchless
	100 m., Wausau, Wis.	Fred Barber	Matchless
1961	500 m., Jack Pine, Lansing, Mich.	Lew Atkinson	Triumph
	400 m., Greenhorn, Pasadena, Calif.	Fred Borgeson	Matchless
	250 m., Little Burr, Columbus, Ohio	John Penton	NSU
	175 m., Wausau, Wis.	Bill Baird	Triumph
	150 m., Cayuta, Schuyler Co., N. Y.	John Penton	NSU
	125 m., Sandy Lane, Camden, N. J.	John Wright	Triumph

## Appendix

1962	Bill Baird, Sterling, Ill.	Triumph
1963	Bill Baird, Sterling, Ill.	Triumph
1964	Bill Baird, Sterling, Ill.	Triumph
1965	Bill Baird, Sterling, Ill.	Triumph
1966	Bill Baird, Sterling, Ill.	Triumph
1967	Bill Baird, Sterling, Ill.	Triumph
1968	Bill Baird, Sterling, Ill.	Triumph
1969	John Penton, Amherst, Ohio	Husqvarna

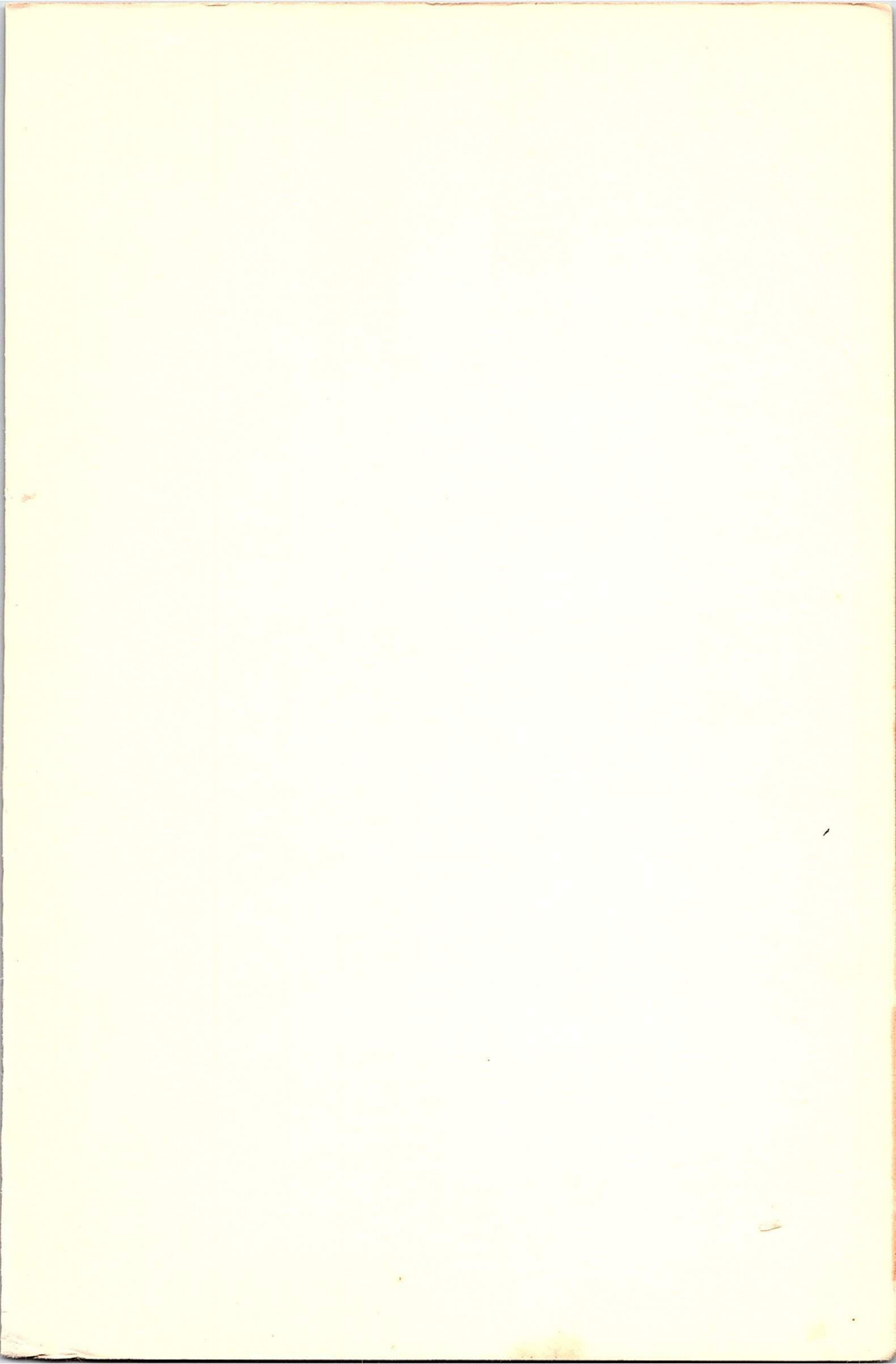
### 1969 GRAND NATIONAL ENDURO CHAMPION CONTENDERS

1st	John Penton, Amherst, Ohio	Husqvarna	176 points
2nd	Jack McLane, Port Huron, Mich.	Honda	111
3rd	Buck Walsworth, Valparaiso, Ind.	Ossa	109
4th	Robert Fusan, Glenshaw, Pa.	Husqvarna	101
5th	Dave Knutson, Valparaiso, Ind.	Yamaha	80
6th	Norman Ford, Port Gibson, N. Y.	Triumph	65
7th	Gene Burcham, Northridge, Calif.	Triumph	60
8th	Paul Hunt, Woodland Hills, Calif.	Harley	60
9th	Doug Wilford, Amherst, Ohio	Penton	54
10th	John Buffaloe, Bloomington, Ind.	Bultaco	52

### 1969 NATIONAL CHAMPIONSHIPS

75 m.	Stone Mountain, Dalton, Ga.	John Buffaloe	Bultaco
90 m.	Newfield, N. Y.	Jack McLane	Honda
95 m.	Curley Fern, Whiting, N. J.	Jack McLane	Honda
100 m.	Lonesome Pine, Abingdon, Va.	John Young	BSA
115 m.	Back Mountain, Dallas, Pa.	Dave Latham	Greeves
120 m.	Cayuta, Schuyler County, N. Y.	Buck Walsworth	Ossa
125 m.	Cowbell Derby, Upper Lake, Calif.	Jim Kelly (a B rider!)	Yamaha
135 m.	Sandy Lane, Camden, N. J.	Bob Fusan	Husqvarna
150 m.	Trona, Calif.	Gene Burcham	Triumph
155 m.	Busted Piston, Potosi, Mo.	Doug Wilford	Penton
175 m.	Burr Oak, Shelby, Ind.	John Penton	Husqvarna
250 m.	Little Burr, Athens, Ohio	Jack McLane	Honda
400 m.	Jack Pine, Lansing, Mich.	John Penton	Husqvarna
500 m.	Greenhorn, Pasadena, Calif.	Paul Hunt	Harley

In 1970 and thereafter, all Nationals will be multiples of 50 miles. There will be several 100-mile Nationals, several 150-mile Nationals, and the like. There will be 20 Nationals in all.



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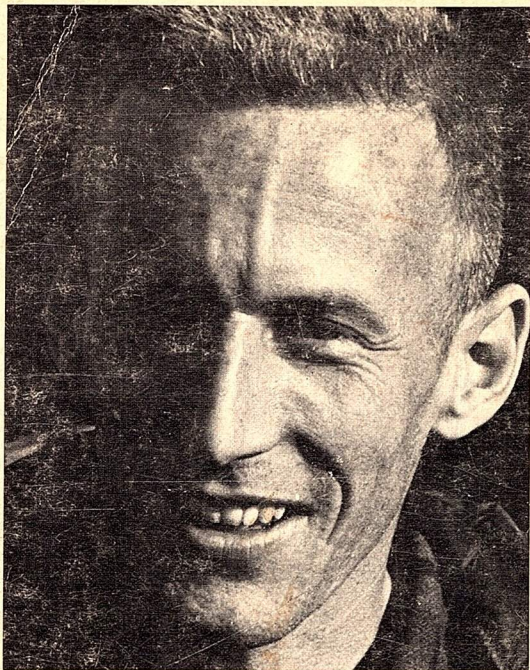


Photo: Peter Benes

Tom Jones has been riding in and working on enduros for ten years. He also competes in scrambles (expert) and field meets. He is president of Meteor Motorcycle Club, the sponsor of Sandy Lane Enduro. He rides a motorcycle daily, and has made three trips to Mexico on various machines.

Jones was born in Philadelphia in 1934, and has lived there most of his life. Since graduating from Washington College, he has worked as a school teacher, cab driver, librarian, motorcycle mechanic, teamster, and mill hand. Currently he is a union carpenter. His published writing includes a novel, *Stairway to the Sea*, a serialized *History of Philadelphia*, and numerous articles in *Cycle World Magazine*.

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